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A CLINICIAN'S EVALUATION OF X RAY EXAMINATION OF THE LUNGS.¹

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WHEN the medical applications of X rays were first announced at the end of 1895, they were received with incredulity. Such simple feats as the demonstration of a needle in the hand were readily performed and the appreciation of X rays as an aid to surgery and medicine continually increased, especially when radiography was undertaken by medical practitioners, better capable than the photographers in whose hands it was at first to interpret skiagrams. Despite a few errors, their value was increasingly appreciated until it culminated in the subservient reliance of the clinician who sat humbly at the feet of the radiologist to receive his *ex cathedra dicta*.

But during the last ten years doubt has been expressed of the infallibility of the skiagram and recently radiologists have been subjected to severe criticism and even recrimination.

Thus Dr. Richard Cabot⁽¹⁾ tells us:

Some radiologists believe that they can detect the presence of tuberculosis in the lung by radioscopy at a period at which no other method of physical examination shows anything abnormal, but *post mortem* results rarely in my experience support this belief. In *incipient* tuberculosis the X-ray as often leads us wrong as right.

Again we read⁽²⁾:

There is at the present time an amazing difference of opinion amongst radiologists themselves and between radiologists and clinicians as to the interpretation of X-ray shadows of the hilum region in children. There is no unanimity of opinion as to what constitutes the normal or abnormal, tuberculous or non-tuberculous, active or inactive, old or recent. This is a most unsatisfactory state of affairs and should not be allowed to continue. The authors are of opinion that there is urgent need for further study of the effect of acute non-tuberculous respiratory tract infections upon the hilum gland tissues, both from the clinical and radiological aspects.

H. Morriston Davies⁽³⁾ writes:

It (radiology) has also, however, helped for the time to confuse us by showing us the shadows known as "pleural rings," and those changes at the root of the lung which have given birth to the nomenclature of "hilum tuberculosis."

F. G. Chandler⁽⁴⁾ states:

The pathetic constancy of the radiologist's diagnosis of tuberculosis is well known.

B. S. Nicholson⁽⁵⁾ describes:

... the radiologist's diagnosis of tuberculosis, and we all know how pathetically constant that usually is—simply because they apparently dub every abnormal shadow they see in a chest radiogram as of tuberculous origin, without reference to its being evidence of an active or passive condition, or to its having originated perhaps some years previously, or to its having some other causation.

Paterson⁽⁶⁾ states:

We are far too ready to accept as gospel the diagnoses which are made for us in the laboratory or in the X-ray room.

Andrew Stewart⁽⁷⁾ states:

What was presumed to be tuberculosis deposit by the radiologist is really a relic of a former simple inflammation in the pulmonary lobules. It is a very good example of what Sir Thomas Horder terms the "bastard pathology" of the radiologist... the X ray man allows his impressions to run away with him.

Badcock⁽⁸⁾ writes:

It is obviously unwise to depend upon the shadow for diagnosis and entirely ignore the substance.

It seems therefore opportune to consider the value to the physician of examination of his patient's lungs by skiagraphy and skiascopy. I undertake this the more readily as it has been my fortune to be familiar with the subject from its inception. I was an undergraduate when Professor Röntgen, of Würzburg, announced his discovery, a discovery made by a fortunate accident while experimenting with a Crookes's tube, so well known to English physicists that even in distant Sydney Professor Threlfall and his assistant, afterwards Professor Pollock, were able to set up the apparatus and repeat the experiment within a few days of the cabled announcement. I was present a few weeks later when Professor Threlfall addressed the Medical Society of the University of Sydney on the subject of the new radiation and showed us a skiascopic picture of the hand of one of the audience, afterwards Dr. W. J. Durack.

It was my fortune also to be the resident assistant at Sydney Hospital to the late Dr. Lawrence Herschel Harris, when in 1901 he was appointed honorary radiographer. In 1909 I served in the latter position at the Royal North Shore Hospital of Sydney and I have since then frequently joined radiologists in the screening of my own patients and the discussion of skiagrams, though, of course, the mechanical developments of modern X ray apparatus have long passed beyond my ken.

Lest it might seem that in this article I criticize them severely, I here assert my great admiration for their work and my gratitude for the help I have received from them.

Indeed, the great value of radiology must be generally admitted. It is notorious that without its aid the exact diagnosis of intrathoracic growths, of encysted empyema, of unresolved pneumonia, of partial pneumothorax and of enlarged glands or tumours of the mediastinum is extraordinarily difficult and that of hernia of the diaphragm usually impossible. It demonstrates a single hydatid cyst with startling and conclusive accuracy. It often suggests that tuberculosis is more or less advanced than the clinical signs indicated; and the skiagram affords a permanent record.

Yet in all these conditions mistakes may occur and doubtless we have all experienced such episodes as the following:

¹Read at a meeting of the New South Wales Branch of the British Medical Association on April 24, 1930.

A middle aged lady presented suspicious signs at one pulmonary apex. This was confirmed by a skiagram, but the radiographer reported also extensive tuberculous infiltration at the base. This was really the result of an empyema following acute pneumonia some years previously; the radiographer had taken the picture without stripping the patient and so had not seen the operation scar which would have been clearly visible on the most cursory inspection.

W.B., a man of fifty-eight years, had very extensive disease provisionally diagnosed as carcinoma of the upper lobe. The X rays confirmed this, but showed also an extensive lesion at the base of the other lung which was said to suggest consolidation, fluid or thickened pleura. I could find no clinical confirmation of this latter and no abnormality was discovered at this site on careful *post mortem* examination.

W.R., a man of fifty-seven years, suddenly collapsed at work and lost consciousness, but recovered without any continuing evidence of a cerebral hæmorrhage. He had obvious arteriosclerosis and some dulness suggesting a lesion of the first part of the arch of the aorta. He was examined by two radiographers within a few days; one reported a slight enlargement of the aortic arch and the lungs quite clear; the other found in his skiagram tuberculosis of both apices, fairly chronic in type.

E.G., a boy of nineteen years, was not under my care, but I saw him in consultation. He had very severe paroxysmal pain in the chest with distressing cough and prostration and very extensive diffuse morbid signs in the lungs. Two skiagrams were taken of him also and one radiologist reported hydatid cysts or tuberculosis or both; the other metastases of malignant disease. The *post mortem* findings conclusively confirmed the latter.

The radiologists themselves frankly admit the possibility of error and constantly strive to perfect their technique. Thus Dr. Stuart Cross⁽⁹⁾ tells us:

On practical application we find that the usual stereoscopic views of the thorax do not always reveal every change in the lungs, pleuræ or mediastinum and when revealed the exact location and nature cannot always be determined.

Most of what can be seen in the latter (the standard postero-anterior films) is misleading.

Again⁽¹⁰⁾:

Errors are introduced owing to the divergence of the rays. Though these errors are known to exist, their magnitude and importance are, in this country at any rate, not sufficiently recognized. . . . The errors are of two kinds: (1) errors of position, (2) errors of size.

Colin Macdonald⁽¹¹⁾ writes:

If the foreign bodies are small, even though quite opaque, they may be overlooked through overlapping the spine or the cardiovascular or root shadows and so it is expedient that lateral and oblique views in addition to the postero-anterior views should always be taken.

On the other hand, the calcification that takes place so frequently at the lung roots, is sometimes liable to be mistaken for a relatively opaque foreign body, for example, a tooth. I have seen this mistake made before now.

Similarly, Dr. Hewlett⁽¹²⁾ tells us that interpretation of skiagrams is so difficult that a second X ray examination is often required three months later. And Dr. C. C. Anderson⁽¹³⁾ describes cases of mottling of the lungs of children shown on the X ray plates, but no abnormality discoverable at the *post mortem* examination to account for the shadows.

The difficulty with regard to hilum tuberculosis, or as it is more commonly called hilus tuberculosis, is even more serious. Pathologists know little or

nothing of tuberculosis spreading in a fan-like manner from the hilum of the lung and many physicians have for years expressed their disbelief in any such phenomenon and their opinion that the disease exists only in the imagination of radiologists who have unfortunately misinterpreted their films and mistaken other anatomical structures for evidence of pulmonary disease. That some radiologists lean strongly towards this opinion is suggested by the following quotations in addition to those already made from Sir Thomas Horder and from Hawes and Friedman:

The discharge of blood into the pulmonary artery disturbs the size, shape and position of the pulmonary vascular tree. . . . The repetition of the classical experiments of Valsalva and Müller, with the visible aid afforded by the X-ray screen and photography clearly demonstrates the wide variation in appearance of the thorax in the same individual. . . . A brief study of the six radiograms presented indicates the need for the reconsideration of many of the terms used by the radiologist. Such terms as . . . "increased hilum shadows" may have to be abandoned.⁽¹⁴⁾

In X-ray plates made during the progress of pulmonary tuberculosis in children the lesion occasionally seems to extend from the hilum to the periphery of the lung, but this deceptive appearance is caused by the projection of three dimensions on the one plane. Blood vessels directed in the axis of the X-ray may be mistaken for calcified nodules.⁽¹⁵⁾

It was difficult from X-rays alone to arrive at the accurate diagnosis of the type of pathological lesion present. . . . the so-called "peri-hilar shadows" were not produced by the glands. The primary focus was seldom detectable in the X-ray picture.⁽¹⁶⁾

In short Dr. Davies⁽¹⁷⁾ concludes by deprecating:

The readiness with which young people with increase of root shadows and the radiations therefrom are labelled "hilum tuberculosis."

Even in the case of hydatid where the skiagram is usually so distinctive, error is possible. Thus the leading radiologist in Sydney told me that on one occasion he assured a physician that while he was in doubt as to the nature of a particular patient's affection, he was confident that it could not be hydatid. The physician conveyed this opinion to the patient and was interrupted by a fit of coughing during which the patient expelled an undoubted hydatid. In fairness to the radiologist it should be added that the case was an extraordinary one of scores or hundreds of minute cysts presenting little or no resemblance to the usual picture of hydatid.

So unhappy a coincidence must be rare, but Dr. Stephens⁽¹⁸⁾ tells us that mistakes are sometimes made even by the most expert radiologists. In one case of his the X ray report had been one of undoubted tuberculosis, but the patient had gone back to the country, coughed up a hydatid cyst and nearly died during an hæmoptysis.

How, then, do errors arise? Sometimes unfortunately, though this becomes increasingly more rare, from poor pictures. "An indifferent radiogram may be not only worthless, but a source of danger."⁽¹⁷⁾

Even with good pictures the difficulties may be extraordinary. It should be remembered that a skiagram is a series of many superimposed shadows, of varying intensity, unevenly distorted and unevenly displaced relatively to one another. How these distortions and displacements arise was shown years ago by Mr. Lynn Thomas⁽¹⁹⁾ and Mr. Jordan Lloyd.⁽²⁰⁾

The radiographers themselves are anxious to overcome the difficulties of projection as is well illustrated in articles from which quotations have already been made by Dr. Ff. Roberts and Dr. Stuart Cross, who show that even stereoscopic films are liable to miss details and to be misinterpreted. In fact, it is not too much to suggest that every radiographer should devote some attention to the study of the mathematical theory of projection.

There still remain difficulties of interpretation arising from the varying amount of blood in the lungs in different phases of respiration and circulation, such as have been discussed at length by Dr. Crowden and Dr. Harris in an article quoted above.

Lastly there are the difficulties of aetiological diagnosis as between tuberculous and non-tuberculous bronchiectases which it is perhaps unwise for the radiologist to attempt. Indeed some physicians consider that the radiologist should be content to describe what he sees and not to attempt to name the cause from which it arose, certainly not to implicate a particular bacterium.

The dangers to the patient of X ray examinations of the chest, such as electric shock, burns, iodism from "Lipiodol" administered to define bronchi or cavities or from collapse following pneumothorax induced for the same purpose, should all be avoided by reasonable care, though doubtless they will recur from time to time, let us hope with increasing infrequency, for all human effort is fallible.

Summing up our review we may repeat what Mr. Paterson and Mr. Corbin have said of another aspect of X ray diagnosis that:

A radiological diagnosis as such does not exist. Apart from the clinical signs and symptoms a proper diagnosis is impossible.⁽²¹⁾

I would urge great caution on the specialists who do X-ray examinations, in conveying their opinion on the result of their films without having the full clinical history to aid them in arriving at an accurate diagnosis.⁽²²⁾

These opinions support those of Dr. Rist,⁽²³⁾ who hopes for a time when a line will no longer be drawn between the physical signs *par excellence* and the radiological finding, and of Dr. Stewart⁽²⁴⁾ that the X ray examination is one item in the clinical examination and does not supersede any part of it.

I cannot put the matter better than by echoing the words of Sir Humphry Rolleston⁽²⁵⁾:

It is natural that there should be a wholesome rivalry between the clinicians and the laboratory workers as to who shall be regarded as the decisive makers of the diagnosis; it is therefore important that clinicians and radiologists should be in constant touch and consult frequently on equal terms, each thus acquiring the special knowledge and perspective of the other . . . the radiologist is the helpful colleague of the clinician.

If one could desire more than this, I commend to him the words of Lord Dawson of Penn,⁽²⁶⁾ that difficulties will disappear when there is more frequent coordination between the clinicians and the radiologists which will benefit both, for each will be able to see the difficulties of the other.

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PULMONARY TUBERCULOSIS IN CHILDHOOD, WITH SPECIAL REFERENCE TO ITS RADIOLOGICAL ASPECT.¹

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THE main theme of my discourse tonight will be the diagnosis of pulmonary tuberculosis in early childhood. This presents a very different problem, both clinically and radiologically, from the diagnosis of tuberculosis in adult life on account of the difference in the pathology of the disease at these age periods.

Adults have almost invariably been sensitized to the tubercle bacillus by contact during life and in consequence an anaphylactic reaction develops at the site of the primary infection with a tendency to productive tubercle formation and tissue destruction, with the result that the primary focus is usually well marked and forms the first clinical evidence of disease. In children bony and glandular structures are most commonly affected, the lungs much more rarely, and when this does occur, the primary focus is almost invariably situated at the periphery of the lung and is so small that it is not as a rule recognizable by clinical or radiological examination and it may even be difficult to discover at autopsy. The reason is that children have not been sensitized to the tubercle bacillus by a previous infection and severe local reaction does not occur around the primary lesion. In those rare cases, usually in older children, which simulate the adult type, this sensitization has probably occurred and the primary focus becomes the main lesion. From this focus, however, the bacillus passes through the peribronchial lymphatics to the tracheo-bronchial glands and there causes the extensive enlargement and caseation which is commonly known as hilar tuberculosis. This is exactly parallel to the condition which we find in tuberculous disease of other parts of the body, for instance, in the cervical region, where the primary lesion in the tonsil or teeth is usually imperceptible and the first clinical evidence of disease is the enlargement of the regional lymphatic glands in the neck.

The path traversed by the tubercle bacillus to cause the primary lung infection is by inhalation through a bronchus or by the lymphatics and blood stream. Some very interesting experiments have

been recently carried out in America which show that if tubercle bacilli are inoculated subcutaneously, they will travel by the lymphatic vessels and glands until they eventually reach the lymphatic duct, thence passing through the great veins and right heart to reach the lungs.

From the hilar glands extension may take place in three ways:

1. By the blood stream, causing miliary tuberculosis and it is in this condition that X ray examination is of the greatest possible value. Physical signs in the lungs are frequently scanty and may be altogether absent, but the picture shown by the X rays is absolutely characteristic and in comparing *post mortem* records with the findings during life, I have found a constant agreement between the two.

2. By local extension causing an acute caseous tuberculosis, sometimes with cavitation. This also may give a characteristic X ray picture in the middle lobe of the lung with the base to the hilar region and the apex at the periphery. Sometimes, however, the shadow is not characteristic and it may be impossible to distinguish it from that occasioned by a pneumonia. (In passing I may mention that pneumonia will give a shadow very early in the disease and this may be of considerable clinical assistance.) This difficulty serves, I think, to emphasize two points, the importance of giving the radiographer a reasonable history of the case and of repeating the X ray examination at a later date in a doubtful case.

3. By the bronchi giving rise to an acute tuberculous bronchopneumonia. This condition also shows a characteristic appearance in the X ray picture which is of great value to the clinician if the physical signs are equivocal.

The diagnosis of hilar tuberculosis itself is beset with pitfalls, whether it is uncomplicated or associated with some degree of spread into the lung parenchyma. Other non-specific infections, such as pertussis, chronic bronchitis and bronchiectasis, Hodgkin's disease and lymphosarcoma, may give rise to enlargement of these glands. This, in its turn, causes pressure on the bronchial lymphatics and veins and brings about increase in the pulmonary markings towards the apex and it is in these conditions that the clinical evaluation of X ray appearances is most difficult. One of the most common patients presented for examination at the Children's Hospital Out-patient Department and also in private practice, is the thin child with chronic cough whose parents fear a latent tuberculous infection, but who is in reality suffering from chronic bronchitis or early bronchiectasis usually associated with adenoids or nasal sinus suppuration.

The object of the practitioner is in these circumstances to exclude the possibility of a tuberculous infection and it is in precisely such cases that doubt may arise in the X ray examination. In some of these, of course, the X ray appearance is quite

¹ Read at a meeting of the New South Wales Branch of the British Medical Association on April 24, 1930.

definitely that of a chronic bronchitis with some peribronchial thickening; but there remains a certain percentage in which the diagnosis is in doubt.

It would appear, then, that our main problem is to distinguish early hilar tuberculosis from early chronic bronchitis and early bronchiectasis. In an endeavour to elucidate this problem I made a careful study of the case records and X ray photographs of such patients in the Royal Alexandra Hospital for Children during the last twelve months; but the evidence was confusing and positive proof was not available, as none of those with doubtful infections had come to *post mortem* examination. From the mass of material collected, however, and with Dr. Sear's kindly help from the radiological aspect, I came to the following conclusions. That the important factors in the diagnosis are: (i) the clinical history, particularly if it reveals close contact with a tuberculous person; (ii) the von Pirquet reaction, if it be borne in mind that this may be absent in an overwhelming infection; (iii) sputum examination if it is available; (iv) clinical examination which is frequently inconclusive, because a lesion deeply situated in the thorax may give very few positive signs; (v) X ray examination.

Enlargement of the paratracheal as well as the bronchial glands is in favour of a tuberculous infection.

Evidence of mottling, rather than linear markings along the bronchi, especially if it spreads upwards and outwards from the hilar region, also supports this diagnosis. In a doubtful case repetition of the X ray examination in three months will give the most reliable information of all.

McNeil in a recent article in *The British Medical Journal* states that:

Healed or inactive tubercular lesions are rare under two years of age; they increase after that age, and the great majority of these healed or latent tubercular lesions are in the abdominal mesenteric glands.

Definite increase in lung mottling, as shown by X rays at the end of three months, will therefore practically establish the diagnosis.

The use of "Lipiodol" followed by X rays will in definite cases of bronchiectasis give an unmistakable picture.

In the hope of finding evidence of the frequency of pulmonary tuberculosis in the children of this country, I made a careful study of the *post mortem* records of the Royal Alexandra Hospital for Children by courtesy of Dr. Tidswell. The interesting fact arose from this examination that during the past few years the *post mortem* statistics do not contain the record of a single death from pulmonary tuberculosis; all such patients have died from generalized tuberculosis, either miliary tuberculosis or tuberculous meningitis.

I made a rough analysis of the twenty-one cases of generalized tuberculosis which came to autopsy

during the last fifteen months. In seven of them or 33% definite hilar tuberculosis was found; in another seven (33%) involvement of the lung parenchyma, apart from miliary tuberculosis, had occurred. In six cases (30%) intestinal ulceration was found, in eight cases (39%) the mesenteric glands were involved, and two cases (10%) were associated with joint disease.

The large percentage of cases showing intestinal ulceration in this series is very interesting. In children dying from other diseases than tuberculosis, Dr. Tidswell informs me that he has not seen any in which tuberculous lesions of the thorax have been present. This statement is based on the evidence of six hundred and thirty *post mortem* examinations since January, 1925.

The following conclusions can, I think, be drawn from these data:

1. Tuberculous disease in young children is suspected more frequently than it exists.
2. When it appears as a definite entity it is active and almost invariably progresses to a fatal issue.
3. The cause of death in these cases is a generalized tuberculosis.
4. It follows as a corollary that the greatest care should be taken not to suggest the diagnosis of pulmonary tuberculosis to the parents, unless clinical evidence, supported by X ray examination, abundantly justifies that conclusion.

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CHEST RADIOGRAPHY.¹

By J. G. EDWARDS, M.B., Ch.M. (Sydney),
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THE subject of chest radiography is a very large one and tonight I intend in the short time at our disposal to deal with only some of the commoner conditions met with in the everyday life of a radiologist.

It was pointed out at the last congress how necessary it was for examination of the accessory nasal sinuses to be made in all cases of obscure chest disease, especially in children. This is most important, as cough if often looked on as being due to tuberculosis when the sinuses are infected.

The conservatism of the medical profession when confronted with a new discovery is well known, but the introduction of X rays into the examination

¹ Read at a meeting of the New South Wales Branch of the British Medical Association on April 24, 1930.

of chest disease was met by the physicians with an antagonism which is now only gradually subsiding.

Radiographic examination of the chest means expert interpretation by specially trained expert medical men. Some physicians will tell you that they interpret the X ray films themselves! Such interpretation is valueless and is the greatest cause of failure of the X ray method of examination. The physician should accept the interpretation of the expert radiologist just as he accepts the pathologist's finding and correlate this report with his other clinical findings.

An X ray film is a record of the various densities of tissue through which the X rays have passed before reaching the photographic film. The lungs are particularly translucent to X rays and any pathological alteration in them is recorded on the film by an increase of density in the particular area affected. Thus a hydatid cyst or a tuberculous deposit is denser than lung tissue and is noted on the original film as a lighter area because fewer rays have penetrated this pathological area and reached the photographic film. Therefore, any variation from the normal in the film is really a projected picture of a pathological process.

The physician by percussion and auscultation thinks that he can map out diseased pulmonary areas, but he can only do so when the affected area is closer than 2.5 centimetres (one inch) to the pleural surface; large consolidated area can be missed by the physician when there is a layer of healthy lung tissue between the lesion and the chest wall. The inability of physicians to locate a lesion definitely by ordinary clinical methods is proved daily in large hospitals where patients are referred with unilateral symptoms. Frequently the pathological process is found to be on the side opposite the suspected lesion or to be equally advanced on the two sides and generally the diseased area is far greater in extent than the clinician dreamed of.

Physicians always lay great stress on the fluoroscopic examination of the lungs. In our practice, extending over twenty-three years, we have been fortunate enough to examine over thirty thousand chests and we consider that fluoroscopic examination is of little value in chest diagnosis.

In 1921, in a series of about eight thousand chest examinations made at Broken Hill, my brother dispensed with screen examinations after the first thousand examinations, as he found he could derive no further information by fluoroscopy than he had already learned from the film. We rarely examine a patient by the screen, but give our opinion on stereoscopic films taken at from four to six feet distance. In abscess and hydatid disease we examine patients with the screen for purposes of localization only. In over 2,300 chest examinations made by us in the past five months we have not examined a single patient with the screen.

We shall now consider a few of the more usually met with forms of lung lesions.

Normal Chest.

Before attempting the interpretation of the abnormal, it is necessary to become familiar with the normal chest.

In adult life we find an unexpected number of markings extending from the hilum to the periphery, due mainly to the shadow cast by the walls of the larger bronchi, by the bronchial glands and by the pulmonary vessels. Recurrent colds and bronchitis add to this density and the observer must become familiar with these shadow pictures at all ages and recognize that they fall within the realm of normality (see Figure I).

A common cause of apical dullness is met with in the presence of cervical ribs, in chests with an abnormally steep angle of the ribs and in scoliosis and the observer must be on the lookout for such abnormalities.

Pleurisy.

In pleurisy we find a haziness over the affected area with limitation of the diaphragm movement on the affected side.

In more chronic conditions we find the dense thickened pleura casting a definite shadow with clear cut edges.

When effusion occurs we get a complete dullness with either a level or crescentic upper margin, higher towards the lateral chest wall, and this level varies by tilting the patient (see Figure II).

Examination in the upright position is necessary; if the patient is recumbent, the fluid will spread out in the pleural cavity and give a general haziness. Large collections of fluid displace the heart to the opposite side.

Interlobar effusions are common and occur as dark areas along the line of an interlobe with a horizontal upper limit.

Calcification of thickened pleura is rare, but may cause difficulty in interpretation.

Pneumothorax.

Pneumothorax is a condition that is rarely diagnosed by the clinician. The physical signs are described in the text books, but it is but rarely in our experience that it is diagnosed before X ray examination (see Figure III).

In hydropneumothorax the fluid level can be made out with the clear unoccupied chest cavity above it (see Figure IV).

Lobar Pneumonia.

The consolidated area in lobar pneumonia throws a very dense shadow and it is very easy to miss an apical consolidation by ordinary clinical examination, especially when all the symptoms are abdominal.

Lower lobe pneumonia is far easier to diagnose clinically. It is impossible to distinguish radiographically between an acute tubercular lobar pneumonia and an ordinary pneumonia. Delayed resolution strongly suggests tuberculous origin.

Bronchopneumonia.

Scattered areas of lobular consolidation are found in one or both lungs in bronchopneumonia.

Hydatid Disease.

A hydatid cyst casts a rounded characteristic shadow. It is frequently treated as tuberculosis by the physician because of the accompanying hæmoptysis. The patient whose skiagram is shown in Figure V failed to respond to tuberculin after three years, but the condition was quite evident on X ray examination. Hydatid, especially in the upper part of the chest, is difficult or impossible to distinguish from new growth.

Syphilis.

Syphilis of the lung is difficult to distinguish from an ordinary bronchitis or bronchopneumonia. Gumma is not rare and is frequently mistaken for a malignant lesion. The therapeutic test is generally conclusive.

Tuberculosis.

In the adult tuberculosis practically always occurs in the upper lobes. Perihilar and basal tuberculosis is so rare that we can almost exclude it as a commencing point of a tuberculosis. Basal lesions are mainly due to congestion, catarrhal condition or bronchiectasis. The early tubercular mottling is of a fine character and looks as if it had been dabbed on with a pledget of cotton wool. Fine striæ appear about the small tuberculous deposits due to the formation of fibrous tissue. Later it may show cavitation and extensive fibrous changes. The right upper or right middle lobes are the commonest sites of commencement (see Figures VI and VII).

It is difficult to distinguish between active and quiescent lesions, but with increased experience in these cases it will be possible to give a very accurate diagnosis. The quiescent lesion shows very sharply defined edges to the individual areas of mottling.

Silicosis.

Silicosis is a fibrosis due to the irritation caused by the solution of silica particles in the peribronchial spaces. Nodulations and striæ caused by fibrous tissue cast characteristic X ray shadows (see Figure VIII). The condition cannot be diagnosed clinically even in advanced cases.

A well established silicosis gives X ray appearances somewhat similar to miliary tuberculosis, but in silicosis there is an absence of fever, unless an apical tuberculosis is superadded.

Once a tuberculous infection occurs in silicosis, it advances at an extremely rapid rate.

At Broken Hill one patient in a special series of six thousand showed clinical signs when no X ray signs were present and, under the circumstances, a very eminent physician who had seen the light, decided to trust to the X ray finding and ignore his clinical findings.

Foreign Bodies.

Foreign bodies are frequently inhaled and cause cough with localized physical signs. These are frequently treated as basal tuberculosis.

In one case the condition caused by a large screw in the right bronchus had been treated as tuberculosis for twenty years and had refused to respond to tuberculin treatment. This patient had been examined by X rays and an inexperienced medical interpreter had failed to notice the screw. Later examination, however, revealed it. The patient quickly regained her normal health after removal of the screw.

Malignant disease of the lung is a complicated subject and I do not intend to deal with it tonight. Every patient with known malignant disease, especially of the breast, should be submitted to X ray examination before radical operation is undertaken in order to exclude metastatic deposits in the lung.

Conclusion.

These few disjointed remarks will perhaps cause members to realize that an X ray examination is an essential in the diagnosis of any chest condition and, even if the physician will not accept it as a method of definite diagnosis, perhaps he will accept it as showing the extent of the pathological condition.

THE MINOR MANIFESTATIONS OF PLUMBISM IN CHILDHOOD.

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AMONG much that has been written on the subject of plumbism in childhood in Queensland, it is remarkable how little attention has been paid to some of the minor but quite important manifestations of the disease.

The muscular paralyses were first described by the staff of the Hospital for Sick Children in 1892.⁽¹⁾ Later on Turner and Gibson⁽²⁾ described the very important encephalopathy with its grave ocular manifestations. Patients manifesting renal damage from lead have been constantly shown and discussed at clinical meetings during the past six years and their relation to the prevailing juvenile chronic nephritis has been demonstrated by Nye,⁽²⁾ but so far as I can discover there has been little account of the minor manifestations of lead absorption.

It is a matter for regret that we have no knowledge of the exact amount of lead required to produce symptoms. Various guesses have been made as to the amount which a child will absorb from a powdered surface on each finger, but nothing accurate has been done.

There is probably, too, the question of idiosyncrasy. In one family the two youngest members of which were persistent nail-biters and finger-suckers, and whose home abounded with white paint in all degrees of powder and where drop sucking was a sport often indulged, there has been no manifestation of lead poisoning and these two grew up to be as healthy as any of their seniors.

So far as I know, Dr. J. L. Selwood, of South Brisbane, was the first to recognize the *formes frustres* of plumbism. He noticed in the course of

school inspection that many children were pale, irritable, listless and backward. Such children, in the absence of other causes, were found to be in a position to absorb lead from some part of their daily surroundings.

In his clinic at the Hospital for Sick Children Dr. Selwood acted on these observations and treated this type of child by the classical lead elimination methods—magnesium sulphate and potassium iodide—with the happiest results. In the study of plumbism in children practically everyone brings with him an attitude of initial scepticism which is only resolved after much experience. For myself I confess that I was intensely sceptical of Dr. Selwood's minor cases of plumbism and it was only after continued experience that I was prepared to go all the way with him.

The symptoms in these children are mainly those of general ill health; there is nothing definite, but the mother complains that the child is listless, has no appetite, will not play, cries without provocation and is losing weight. He may sleep badly, enuresis is not uncommon and slight abdominal pain, not amounting to actual colic, is often present. Headache is a very variable symptom.

On examination there is at first little to be found, the child is peaky, pale and often flabby. He usually cries at any manipulation, but no source of pain or frank tenderness may be found in the limbs or abdomen. Sometimes there is evidence of mouth breathing, there may be a faint blue line on the gums of septic teeth and there may be a slight suspicion of wrist drop or foot drop. The patients with headache rarely have papilloedema. The symptoms are very similar to those described by Mathew in mild cases of industrial plumbism.⁽³⁾

Evidences of possible lead absorption are always present and should be sought for diligently, even if the child's own home affords no supply; there may be a neighbour's, a fence on the way to school or in one case a bridge rail. Nail biting, finger sucking and drop catching (in wet weather) are the commonest methods of collection.¹ The following is an example of an unusual source.

James H., aged three years, from being a very good and healthy baby, was a very sickly and irritable small boy. His appetite was capricious, he slept badly, he lost weight and became pale. He had enlarged tonsils and probably adenoids, but he was so terrified at any attempt to handle him that these were not removed. He then began to wake at night with fright and pain which he could not localize.

Examination revealed very little; a blood examination was not done, but lead was suspected. His own home was quite above suspicion; it was a new War Service home and the Department had checked the paint as lead-free by having it analysed. There seemed no other source of lead until it was remembered that he spent every Sunday afternoon at his grandfather's home, "but there was no lead there." Close inquiry showed, however, that he spent his afternoons there holding the white pickets of the fence with both hands while he watched the passers-by in a mixture of fear and fascination.

Examination the following Sunday showed that his hands were cold and sweating and after an afternoon on the pickets were covered with white powder. The other event

of the afternoon was afternoon tea, when sticky cakes served to collect lead and transfer it to his mouth.

Lead elimination caused great improvement, but he has a nervous basis which he will probably carry with him all his life, though it is at present well covered up.

Blood examination has been mentioned as providing information. The two features are simple anaemia and basophilic stippling, the latter often claimed to be pathognomonic of lead.

Dr. J. V. Duhig who has specialized in blood examination for this purpose very thoroughly at the laboratory of the Brisbane and South Coast Hospitals Board, recently made one hundred consecutive random blood examinations in children at the Hospital for Sick Children. No less than forty-three showed the presence of punctate basophilia. The bulk of these children were entirely free from any manifestation which could be considered, however remotely, as due to lead absorption.

In many cases of plumbism the red corpuscles are quoit-like in appearance owing to a diminution in hæmoglobin in their central portion. Jenner's stain seems the most satisfactory for this work, the deep, coarse granules stand out plainly in the solid circumference of each red cell. The precise nature of these basophilic granules is unknown, although Brookfield⁽⁴⁾ suggests that they are of the same nature as the reticulocytes of the blood and that the two signs mean one and the same thing—slightly stressed over-production of slightly immature red cells.

The test is by no means fool-proof. Even our laboratory at the Hospital has within ten days reported on three specimens as follows: "Slight punctate basophilia and polychromasia in a few cells," "no abnormality detected in the red cells," "numerous cells show basophilia." All three specimens were from one patient.

Lead in the urine is practically pathognomonic of lead absorption, though some children absorb lead and pass it out without sufficient harm being done to produce symptoms.

Mild lead intoxication will often serve to release a partially controlled neurosis.

James F., aged five years and six months, manifested severe neurotic symptoms. He alternated between suspicion and affection in his family relations, he had night terrors, outbursts of negativism as regards food, exercise and sleep that caused numerous household crises. He had bursts of enuresis and some extraordinary games with mud and sewerage works that sounded like a chapter from Ernest Jones, while his general physical health seemed little affected. He was not pale, he manifested no blood changes, his tonsils and adenoids were due for removal, were it not for his neurosis. Anthelmintics produced only a few thread worms. All that could be done seemed to use every possible means to reassure and encourage him and to give him mild hypnotics to secure a good night's rest. He certainly sucked his left middle and ring fingers, but his mother was certain that there was no lead available anywhere, as the house paint was non-poisonous and it was not powdering.

However, a succession of attacks of nocturnal colic made diagnosis almost certain and an area of powdery paint where he constantly played, was shown to contain lead, while his urine contained lead to the amount of 0.1 milligramme per litre. Vigorous treatment with sulphate and iodide worked a remarkable change and his neuroses, though, of course, still present, are well under control.

¹ One mentally defective child acquires sufficient to produce symptoms by direct biting of lead from furniture and other painted surfaces.

The diagnosis of mild plumbism is a temptingly easy one to make, but it is an exceedingly lazy diagnosis and has certainly in my experience led those making it into trouble.

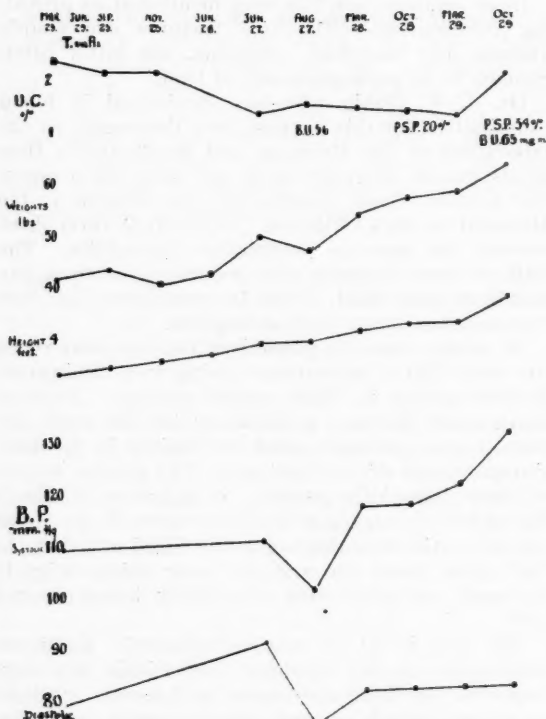


FIGURE I.

The conditions which may be mistaken for minor plumbism, are: Minor degrees of chronic sepsis—of teeth, sinus or tonsils; congenital syphilis; intestinal worms; chronic intestinal indigestion (John Thomson); thyroid deficiency in mild degrees; coeliac disease; pink disease; acute leucæmia. I have seen all these conditions ascribed to lead, some by myself, some by others.

Diagnosis is not made easier by the fact that congenital syphilis, thyroid deficiency and possibly some throat affections, are greatly benefited by potassium iodide; while many patients with chronic indigestion are relieved of much sluggish bowel content by a short course of magnesium sulphate. The only possible method of avoiding mistakes is to keep all these possibilities, as well as lead absorption, in mind when examining the child with chronic ill health and to use every method of diagnosis before deciding on a line of treatment.

The importance of these mild manifestations is not so much in their present course, disagreeable as that may be, as that in some cases at least the intoxication gives rise to the chronic nephritis which is so well known in Queensland and which Dr. Nye has studied. How far vigorous treatment at the time will clear them up completely, is another matter which at present we cannot decide.

The following is an example of what happens when the condition is not cleared up.

Nellie W. is now nearly fifteen. She weighs 28.8 kilograms (sixty-four pounds) and is 128.3 centimetres (four feet three and a half inches) in height. She bit her nails badly in infancy and had occasional attacks of colic for which she received no definite treatment. She was first seen five years ago with her two elder sisters whose history was similar and both of whom have since died of chronic nephritis at thirteen and fourteen. She then was pale, peaky and miserable, she had a faint blue line, there were no paralyses and no papilloedema. Her teeth were bad, her tonsils were large and septic. In March, 1925, she weighed 18.9 kilograms (three stone). Her height was 105 centimetres (three feet six inches). Her colour was sallow and her mucous surfaces were pale. She was very bright, except for occasional headaches. Her systolic blood pressure was 110 and her diastolic pressure 80 millimetres of mercury. Her urine had a specific gravity of 1015; it contained a faint cloud of albumin and had a urea concentration of 2.4%. Her blood contained 3,000,000 red cells per cubic millimetre, the hæmoglobin value was 50% and the colour index 0.8. The film contained many stippled red cells.

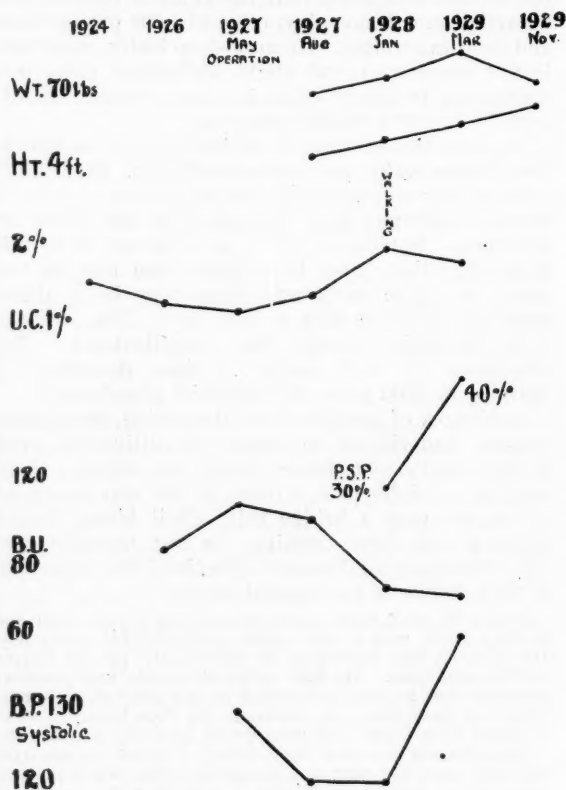


FIGURE II.

She has been under treatment irregularly off and on since, but today is stunted, yellow and ill-nourished. Curiously enough, she is bright at lessons and well up in school. Her systolic blood pressure is 120 and her diastolic pressure 80 millimetres of mercury. The chart shows her progress better than words (Figure I). The urine had a specific gravity of 1016; it contained a trace of albumin. The urea concentration was 2.1%. Phenolphthalein excretion for the first hour was 27 and for the second hour 7, a total of 34.

The blood condition is remarkable. The red cells numbered 3,000,000 per cubic millimetre, the hæmoglobin value was 55%, the leucocytes numbered 18,700 per cubic

millimetre. There was a 40% eosinophilia. No basophilia was present. The Wassermann test yielded a doubtful result, it had twice previously yielded no reaction. Neither the mother's nor two sisters' blood serum gave a reaction.

With this patient there is a rather delayed secondary sexual development, with scanty pubic and axillary hair and late menstruation. Some patients show an opposite condition, but this is very variable. Occasionally in later life there is very severe menorrhagia. I have seen one case in which it practically was the cause of death.

A common feature of many of these cases is a tendency to improvement with care and a stoppage of lead absorption. Nellie W. is an example of this. Vera S. is another example. Her record is shown (Figure II) and a photograph of her as she is at present (Figures III and IV).



FIGURE III.

She was, of course, suffering from severe plumbic paralysis. From 1924 at least she had double foot drop, followed by contractions which made it impossible for her to walk and required operative treatment. Unfortunately all this time her kidney condition was so bad that operation was not advised.

In 1924 her urine had a constant low specific gravity, a constant albuminuria with many hyaline and a few granular casts and urea concentration of only 1.6.

By 1927, although the condition seemed, if anything, worse, yet operation was carried out. In May, 1927, Dr. A. V. Meehan did a Hoke's operation with very satisfactory results, as the photograph, taken November, 1929, shows.

Both she and Nellie W. were shown as sufferers from "plumbo-renal infantilism" in 1927.

Finally, Mrs. H. whose photograph I show, taken twenty-four months before death (Figure V), is possibly a latent sufferer who had no history of any illness, except slight headaches in childhood and constant nail biting, but grew up much undersized.

She was quite well until she was five months pregnant; then she developed an albuminuria and had to have labour induced at five months. She became partly blind from albuminuric retinitis two months later and died eighteen months later.



FIGURE IV.

This patient, it is tentatively suggested, was a sufferer from mild plumbism, unrecognized in childhood. There was probably renal damage present which, however, allowed her to grow up in apparent health, but under the strain of pregnancy the kidney broke down finally and you have the result.

If such is the case, the number of similar patients must be sufficient to account for the discrepancy in

Dr. Croll's⁽⁵⁾ figures between the young males and young females, as in the latter the disease is labelled not "nephritis" but eclampsia.

It is, too, exactly this type of doubtful aetiology which most urgently requires investigation.



FIGURE V.

Summary.

1. Lead poisoning as mild and atypical forms is much commoner in Queensland than is generally supposed.
2. It is an important cause of minor ill health in childhood.
3. Its diagnosis requires care and exclusion of several other common conditions.
4. Blood examination and the examination of urine for lead, while important aids, are not final diagnostic points.
5. The most important diagnostic point is a supply of available lead paint.
6. Treatment should be vigorous and prolonged.
7. These minor forms appear to be the precursors of some cases at least of juvenile chronic nephritis.

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SOME DIAGNOSTIC DIFFICULTIES IN HYDATID DISEASE.

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DURING the past three years ten patients with hydatid disease have come under observation at the Austin Hospital. In only three of these ten patients had a diagnosis of hydatid disease been made prior to admission, the condition of four was diagnosed clinically subsequent to admission and in the remaining three cases hydatid infestation was revealed only by the autopsy examination. Most of the patients' conditions had been investigated at metropolitan public hospitals and several of the patients were subsequently under permanent observation for long periods at the Austin Hospital. It is thus apparent that hydatid disease may give rise to very real diagnostic difficulties. Following is a brief record of the seven cases in which diagnostic errors were made.

Case I.

Clinical History.

C.B., a male, aged forty-nine years, was admitted to the Austin Hospital from a metropolitan public hospital in January, 1926, under the diagnosis of pulmonary tuberculosis. He gave a history of having had malaria, of having been a quartz miner in earlier life and of "miner's complaint" for twenty years. Recently his cough and dyspnoea had become more severe and persistent epigastric pain had developed and he had lost much weight.

Examination on admission disclosed signs of extensive fibrotic and emphysematous changes in both lungs. The liver edge was easily palpable and was displaced downwards, being five centimetres below the costal angle in the mid-line. A firm rounded mass, apparently separate from the liver, was also palpable just below the costal margin on the left side and was thought to be the spleen. A skiagram of the chest confirmed the diagnosis of extensive pulmonary fibrosis and disclosed "peaking" of the diaphragm on the right side. No tubercle bacilli were discovered by repeated examinations of the abundant sputum. The Wassermann test yielded no reaction.

Subsequent to his admission the patient suffered from intermittent attacks of irregular pyrexia. These attacks, as well as the enlarged liver and spleen and the general cachectic condition, were regarded as probably of malarial origin, though no malarial organisms could be found in blood smears and quinine administration did not effect any improvement.

During the early months of 1927 the dyspeptic symptoms, previously not very pronounced, became worse. The patient complained of epigastric pain, aggravated by meals, and attacks of nausea and vomiting; the enlarged liver and "spleen" somewhat increased in size and became tender. The patient became steadily more emaciated. Suspicions were now seriously entertained that the mass formerly thought to be spleen was a primary gastric carcinoma and that the enlargement of the liver was the result of metastatic deposits in that viscus. These suspicions seemed to be confirmed by X ray examination

following a barium meal which disclosed decided irregularity of the lesser curvature of the stomach strongly suggesting carcinoma. A cholecystogram failed to reveal any abnormality of the gall bladder.

The patient's condition slowly but steadily deteriorated and death finally occurred from cardiac failure with auricular fibrillation and extensive oedema in January, 1929.

Autopsy Findings.

The lungs were throughout deeply pigmented, fibrotic and emphysematous and were extensively adherent to the chest wall. There was no definite macroscopical evidence of any focal tuberculous disease. The heart was enlarged and hypertrophied and the right chambers considerably dilated. The liver was small, weighing only 1,311 grammes (forty-six ounces). The capsule was thickened and the organ was firmly adherent to the diaphragm. The whole viscus was displaced caudally as a result of the emphysematous distension of the lungs. Projecting from the anterior border of the left lobe of the liver was a hydatid cyst about three centimetres in diameter, with partly calcified walls and bile-stained contents with detached collapsed membrane. The spleen was only slightly enlarged. The stomach was normal.

The interest of this case in the present connexion lies in the fact that a small hydatid cyst projecting from the lower border of the left lobe of the liver was regarded clinically first as an enlarged spleen and later as a gastric neoplasm. Resemblance to the latter was enhanced by the discovery of a skiagraphic deformity of the stomach, evidently due to indentation by the adjacent cyst. Apparent hepatic enlargement, due to downward displacement of the viscus by emphysematous lungs, had completed the spurious picture of gastric malignant disease with metastases in the liver.

Case II.

Clinical History.

W.B., a male, aged seventy-six years, was admitted to the Austin Hospital in March, 1927, under the diagnosis of pulmonary tuberculosis. His past history was that he had suffered from progressive weakness and increasing cough with blood-stained sputum for several months past. Accurate details of his illness were difficult to elicit, as he was an old alcoholic in advanced dementia.

Examination on admission disclosed impaired percussion note and breath sounds over the basal lobe of the right lung posteriorly and harsh breath sounds without adventitious elsewhere. Abdominal examination revealed decided irregular enlargement of the liver with a firm rounded mass projecting therefrom in the vicinity of the gall bladder. There was no jaundice nor ascites.

His subsequent progress was one of steady mental and physical deterioration, with irregular moderate pyrexia, emaciation, blood-stained sputum and several profuse hæmoptyses. No tubercle bacilli could be discovered in the sputum. The Wassermann test gave no reaction. A provisional diagnosis of probable abdominal malignant disease with metastases in the liver and lung was made; but on account of the patient's age and hopeless mental condition no special investigations were carried out. He died in July, 1927.

Autopsy Findings.

The right lung was firmly adherent to the chest wall, diaphragm and mediastinum. The middle lobe contained a spherical cavity five centimetres in diameter, occupied by detached necrotic hydatid membrane and foul pus. The remainder of the lung was the seat of extensive suppurative bronchopneumonia. The left lung was normal. The right lobe of the liver contained two large separate healthy hydatid cysts, one ten centimetres in diameter abutting on the right lateral aspect of the organ and the other somewhat larger projecting from the lower aspect to

the right of the gall bladder. Both cysts contained clear fluid with abundant brood capsules but no daughter cysts. Save for chronic nephritis and generalized arteriosclerosis, all other viscera were substantially normal.

In retrospect, it must be admitted that the association of an infected lesion of the base of the lung with a rounded tumour of the liver should have suggested the correct diagnosis; but "malignant disease" constituted a satisfying sedative to one's diagnostic alertness regarding this elderly mental wreck. The next case also is in somewhat the same category.

Case III.

Clinical History.

A.H., a female, aged seventy-two years, was admitted to the Austin Hospital from a metropolitan public hospital in May, 1929, under the diagnosis of "carcinoma of the gall bladder and liver." The history was that for two years there had been progressive loss of weight and energy and for the last six weeks rapidly deepening jaundice and some abdominal pain.

On admission the patient was very cachectic and ill. There was a moderate grade of jaundice with general pruritus and a low tension pulse of fifty-eight per minute. The whole upper part of the abdomen was occupied by a large, firm, tender mass with an irregular lower border reaching the navel in the mid-line. The diagnosis appeared to be scarcely in doubt. The patient died a week after admission.

Autopsy Findings.

The lungs were the seat of hypostatic pneumonia. The right lobe of the liver was almost entirely replaced by a cyst twenty-five centimetres in diameter, containing purulent bile-stained fluid with many daughter cysts and necrotic gelatinous membrane. The walls of the cavity were ragged. The adventitious layer was thick and tough. The left lobe of the liver was much enlarged and was the seat of multilobular cirrhosis. The gall bladder was small and sclerosed and contained inspissated pus. The pancreas was tough and fibrotic and its vessels calcified. The kidneys exhibited advanced chronic interstitial nephritis.

This case, like the previous one, exemplifies the frequent fallacy of diagnosing large hepatic tumours as malignant disease in the absence of demonstrable primary growths.

Case IV.

M.M., a female, aged seventy-three years, was admitted to the Austin Hospital from a metropolitan public hospital in April, 1927, under the diagnosis of "carcinoma of the stomach." The history was that she had had vague left-sided abdominal pain for several years. The pain was unrelated to food and there had been no vomiting. During the last few months she had lost some weight and had attended a public hospital where after clinical and skiagraphic examination her condition had been diagnosed as gastric carcinoma.

Examination on admission to the Austin Hospital disclosed a spherical, smooth, freely movable mass, the size of a tennis ball, in the epigastrium just above the umbilicus. Clinical examination was otherwise fruitless, save that the systolic blood pressure registered 210 millimetres of mercury and all palpable arteries were thickened.

A skiagram revealed a well-defined rounded shadow corresponding to the epigastric tumour. The situation of the shadow varied with posture. X ray examination following an opaque meal revealed a "filling defect" of the distal part of the stomach occasioned by the pressure of the adjacent mass (see Figure I). The Casoni test gave a direct positive result, but the hydatid complement fixation test gave no reaction.

The diagnosis of calcified hydatid cyst of the omentum was made. Operation was declined and on account of the patient's age and the probable quiescence of the parasite, was not strongly urged.

The case is of interest because, like Case I, a palpable tumour with a "filling defect" of the stomach simulated gastric carcinoma.

Case V.

A.B., a female, aged fifty-five years, was admitted to the Austin Hospital in January, 1926, under the diagnosis of "pulmonary tuberculosis." She had had a cough with blood-stained sputum for six months. There had also been loss of weight, dyspnoea on exertion, night sweats, one profuse hæmoptysis and some indefinite thoracic pain.

Examination on admission disclosed impaired percussion note and diminished breath sounds over the upper part of the left lung and an area of flat dullness and almost absent breath sounds about the lower angle of the right scapula and the lower part of the axilla. Adventitious were few and inconstant.

Subsequent to her admission, repeated examinations of the sputum failed to reveal any tubercle bacilli. The Wassermann test yielded no reaction. Several slight hæmoptyses occurred and in May, 1926, a small piece of hydatid membrane was coughed up. The hydatid complement fixation test was then found to yield a strong positive reaction. Skiagraphic examination, previously neglected, revealed two well defined hydatid cysts, one in each lung. That in the right lung was located near the base and was the size of a hen's egg. The second and larger cyst lay near the centre of the left lung (Figure II).

Surgical removal of the cyst in the right lung was undertaken successfully on July 11. On July 23 the patient coughed up a small piece of membrane and on July 30 a much larger piece. A skiagram now revealed decidedly diminished density of the shadow of the cyst in the left lung. Thereafter the patient's cough greatly improved, the sputum diminished and no further membrane appeared. She was discharged in excellent health in October, 1926. A subsequent skiagram in March, 1927, revealed that the cyst in the left lung had entirely disappeared, leaving both lungs normal in appearance throughout.

The case is of interest because of the initial diagnostic error, the presence of two independent pulmonary cysts and the complete spontaneous expulsion of the second cyst.

Case VI.

V.C., a female, aged twenty-five years, was admitted to the Austin Hospital in February, 1926, under the diagnosis of "pulmonary tuberculosis." She had had an attack of right basal pleurisy in the previous month, with persistent cough, blood-stained sputum and night sweats thereafter. There had been no loss of weight or strength.

Examination revealed absolute dullness to percussion, with diminished breath sounds over the basal lobe of the right lung where a slight pleural friction sound was also audible. General clinical examination was otherwise fruitless.

Several profuse hæmoptyses occurred during the few weeks subsequent to admission. Repeated examinations of the sputum failed to reveal any tubercle bacilli. The Wassermann test yielded no reaction.

A skiagram in May, 1926, disclosed a large, dense rounded shadow in the lower part of the right lung. The hydatid complement fixation test gave a strongly positive result.

Surgical removal of the cyst was successfully accomplished in July and subsequent skiagrams revealed almost complete reexpansion of the lung. The patient was discharged in good health in August, 1926, and has remained well to the present date.

No special comment is necessary on this case which, like the previous one, merely exemplifies the familiar error of diagnosing pulmonary tuberculosis in the presence of chronic pulmonary affections with persistent absence of tubercle bacilli in the sputum and physical signs largely restricted to the basal lobes of the lungs.

Case VII.

A brief report of Case VII is contained in THE MEDICAL JOURNAL OF AUSTRALIA for September 8, 1928. The following more detailed account is given in order to make the present series complete.

D.H., a female, aged thirteen years, was admitted to the Austin Hospital in July, 1925, under the diagnosis of "spinal tuberculosis with psoas abscess." Her past history was as follows. When six years of age she had begun to suffer from aching pain in the left leg and on medical advice she was kept recumbent for two years. She was then allowed up for a year, but the pain recurred and she returned to bed. When she was twelve years of age a large swelling slowly appeared in the right iliac fossa, discharged and formed a sinus which persisted for six weeks and then healed. No reliable information was obtainable regarding the characters of the first discharge from this swelling. Three months later a swelling appeared in the right loin and persisted up to the date of her admission to hospital. At no period of her complaint had the patient had any pain in the back. The competent practitioner under whose care she had been, regarded the condition as spinal tuberculosis with lumbar and psoas cold abscesses.

Examination on admission disclosed a healed scar and some diffuse fullness in the right iliac fossa, a large painless fluctuant swelling in the right loin and an obvious lateral angular deformity and extreme rigidity of the spine in the mid-lumbar region. No other bodily abnormalities were detected and the girl's general nutrition and health were good. A skiagram revealed collapse of the body of the third lumbar vertebra with the convexity of the angulation to the left, decidedly increased bony density of the affected region and the very distinct outline of what was regarded as a right psoas abscess cavity containing sequestral particles (Figure III). A similar but smaller "psoas abscess" outline was present on the left side. The diagnosis thus appeared to be confirmed beyond reasonable doubt and the treatment adopted during the next two years was immobilization on a plaster bed and repeated aspiration of the lumbar and right iliac "abscesses." Both of the latter on several occasions pointed and discharged by sinuses which would heal slowly again. The contents aspirated from the "abscesses" was for the most part a thin sero-purulent flaky fluid, often nearly clear. Microscopical examination thereof revealed many endothelial leucocytes distended with fat droplets, and no organisms. No guinea-pig inoculation was performed.

In August, 1927, the right iliac sinus emitted a large mass of typical hydatid membrane in a fairly good state of preservation. The Casoni test was carried out and gave an immediate positive result. The hydatid complement fixation test yielded no reaction. The sinus healed rapidly and has remained healed since. A skiagram in February, 1928, revealed no material change in the spine, but the outlines of the "abscess" cavities were now much contracted in extent (Figure IV). The patient was discharged early in 1928 and has been actively up and about until the present date without any recurrence of her complaint.

The case is remarkable for its almost perfect simulation of tuberculous disease with cold abscesses and for the complete spontaneous cure by expulsion of the parasite. Even in retrospect it is difficult to see how a correct diagnosis could have been reached, unless the condition had been suspected and appropriate diagnostic tests applied or the early fluid examined for hooklets or scolices. The extensive bone destruction effected by the disease suggests that the primary location of the parasite was in the bony spine and that the extra-vertebral extension of the cyst or cysts into the soft tissues was a secondary event. The swellings thus produced were not psoas and lumbar "abscesses" but psoas and lumbar hydatid cysts. It is note-

ILLUSTRATIONS TO THE ARTICLE BY DR. J. G. EDWARDS.

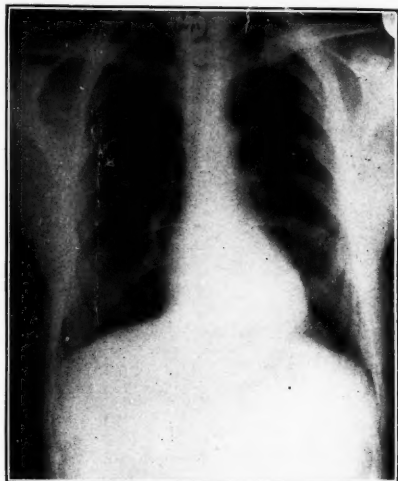


FIGURE I.
Skiagram of a normal chest.



FIGURE II.
Skiagram of left-sided pleural
effusion with thickened pleura
at right base.

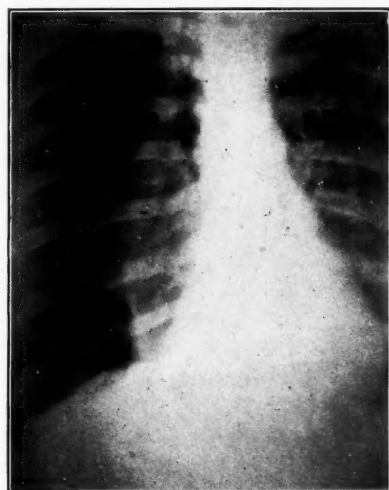


FIGURE III.
Skiagram of pneumothorax.

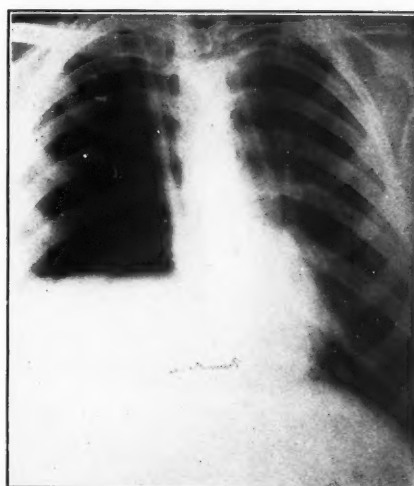


FIGURE IV.
Skiagram of hydropneumothorax.



ILLUSTRATIONS TO THE ARTICLE BY DR. J. G. EDWARDS.

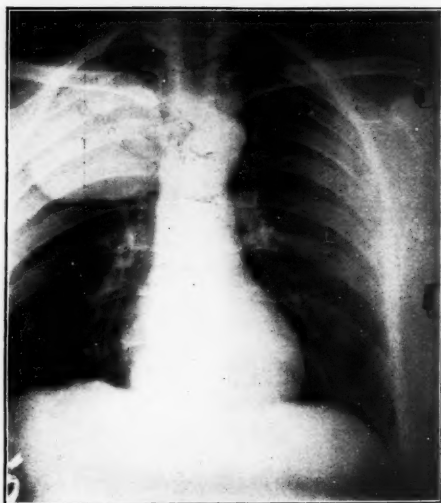


FIGURE V.
Skiagram of hydatid cyst.

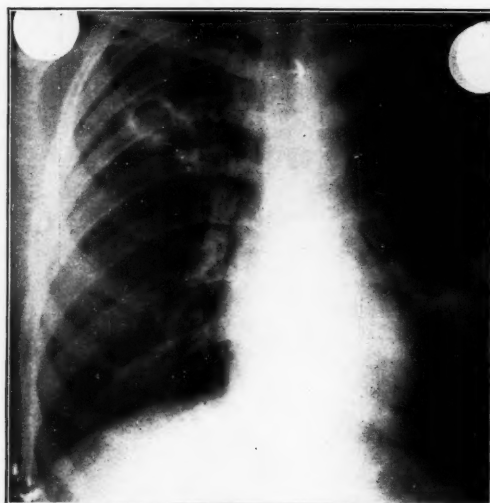


FIGURE VI.
Skiagram of tuberculous cavity in right middle lobe
and thickened pleura over left lower lobe.

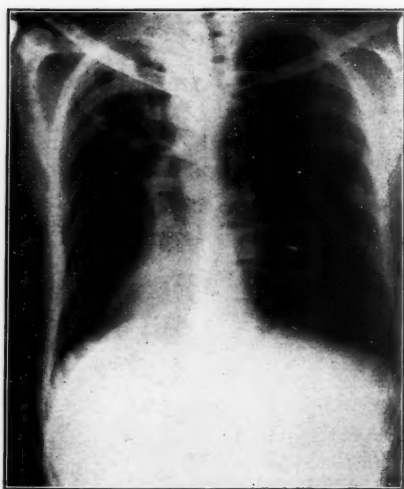


FIGURE VII.
Skiagram of left-sided apical tuberculous
mottling.

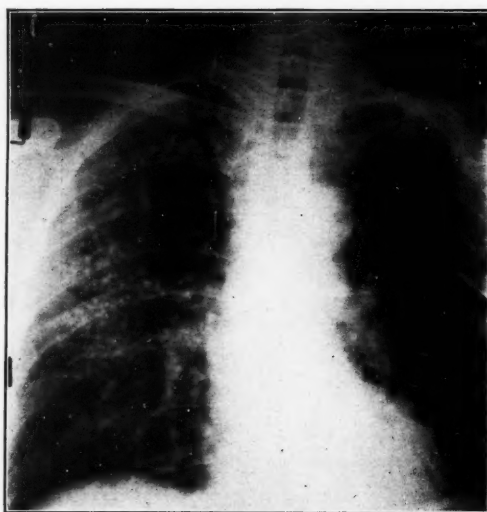


FIGURE VIII.
Skiagram of well established silicosis.

ILLUSTRATIONS TO THE ARTICLE BY DR. RUPERT A. WILLIS.



FIGURE I.

Skiagram following an opaque meal in Case IV, showing the "filling defect" of the pyloric part of the stomach, occasioned by the adjacent calcified cyst, the outline of which is indicated by the arrows.

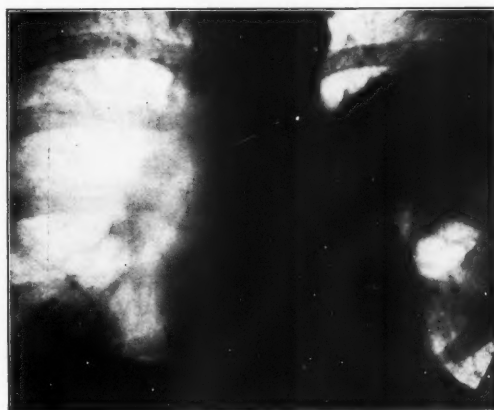


FIGURE II.

Skiagram of the lungs in Case V, showing a large cyst in the left lung and a smaller cyst at the base of the right lung.



FIGURE III.

Early skiagram of the lumbar region of the spine in Case VII, showing the bony collapse and angulation and the outline of the "psoas abscess" on the right side denoted by the arrows.



FIGURE IV.

Later skiagram in Case VII, after discharge of the cyst membrane, showing the reduction in size and density of the shadow seen in Figure III.

ILLUSTRATIONS TO THE ARTICLE BY DR. EWEN DOWNIE.

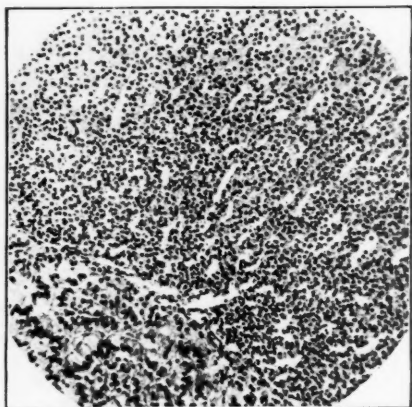


FIGURE VII.

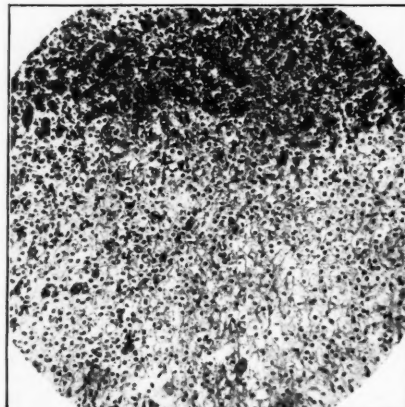


FIGURE VIII.

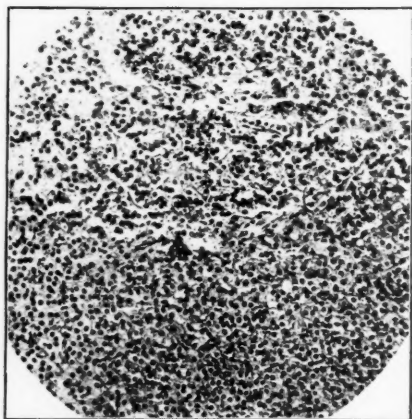


FIGURE IX.

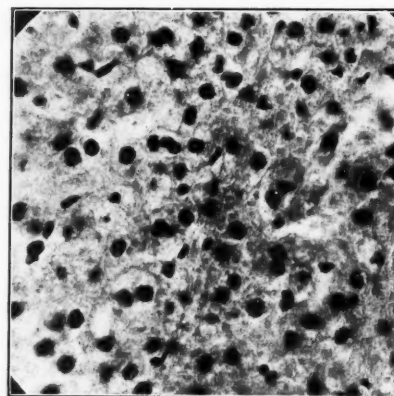


FIGURE X.

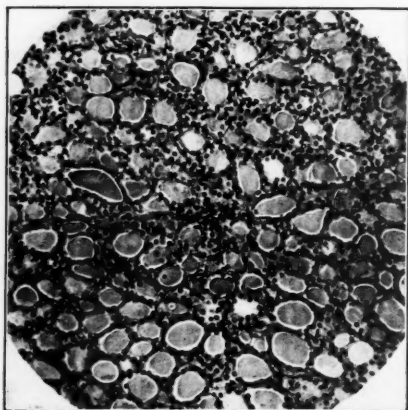


FIGURE XI.

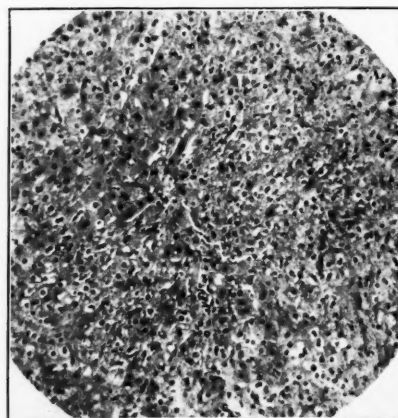


FIGURE XII.

worthy that, while the Casoni test gave a decisive positive result, there was no deviation of complement in the serological reaction, suggesting that for some time the parasite had been inactive and degenerate. This was no doubt due to mild bacterial infection introduced into the cysts by the repeated aspirations. Indirectly, therefore, the therapeutic measures adopted were probably responsible for the eventual destruction of the parasite.

Summary and Conclusions.

Seven cases of hydatid disease in which diagnostic errors were made, are described. These may be tabulated as follows.

Case.	Initial Diagnoses.	Final Diagnosis.
1	On admission pulmonary tuberculosis; later chronic malaria, gastric cancer.	Pulmonary fibrosis and emphysema; hydatid of the liver.
2	On admission pulmonary tuberculosis; later abdominal cancer with hepatic and pulmonary metastases.	Hydatid of the liver; suppurating hydatid of the lung.
3	Carcinoma of the gall bladder and liver.	Suppurating hydatid of the liver.
4	Carcinoma of the stomach.	Calcified hydatid of the omentum.
5	Pulmonary tuberculosis.	Multiple hydatid cysts of lungs.
6	Pulmonary tuberculosis.	Hydatid of lung.
7	Spinal tuberculosis, with cold abscess.	Spinal hydatid, with extra-spinal extension.

The following conclusions are devoid of originality; but the fact that such diagnostic errors, as are detailed in this paper, can still be made, justifies the repetition of rules which the most competent clinicians appear sometimes to forget.

1. Hydatid disease should receive careful consideration in all obscure pulmonary lesions, especially if tubercle bacilli are repeatedly absent from the sputum or if abnormal physical signs are largely restricted to the bases of the lungs.

2. In cases of intraabdominal masses of uncertain nature, especially if they involve the liver and no apparent primary growth is present, hydatid disease should be borne in mind and the appropriate tests carried out.

3. Hydatid infestation of bone may closely simulate tuberculous and other inflammatory diseases and the diagnosis can be finalized only by educing definite and positive microscopical or serological evidence of the nature of the lesion in each case.

Acknowledgement.

I am indebted to the members of the honorary staff of the Austin Hospital for their consent to my placing these cases on record. The complement fixation tests were performed at the Walter and Eliza Hall Research Institute by the kind consent of Dr. Kellaway.

TOXAEMIA AND GLUCOSE TOLERANCE.¹

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Hospital, and Physician to Austin Hospital,
Melbourne.

(From the Baker Institute for Medical Research.)

THE occurrence of any infection in a diabetic patient has been recognized for many years as causing a serious disturbance of carbohydrate metabolism, which necessitates careful observation and treatment during the course of the infection. To a lesser extent some disturbance tends to appear under similar circumstances in normal individuals and in a recent communication Labbé and Boulin⁽¹⁾ have stressed the frequency of its occurrence. The explanation of these facts is by no means clear. The recognized text books on diabetes, beyond mentioning the dangers of infection, do not express any opinion as to the causation, whilst experimental workers on the subject are by no means unanimous in their findings.

To instance this disturbance of carbohydrate metabolism during toxæmia in a normal person, Figure I represents the blood sugar curve following 50 grammes of glucose given by mouth to a boy of nineteen years on the seventh day of an acute lobar pneumonia. There was no suspicion of diabetes in his history and no family history thereof. A normal blood sugar curve is shown also for comparison.

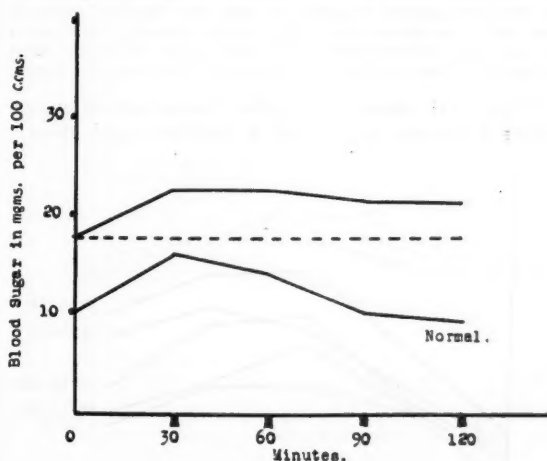


FIGURE I.

Between such a case and one of infection super-added on a true diabetes are to be found many border line cases in which the question: "Is this disturbed metabolism the result of infection or is it a permanent state?" cannot be answered offhand and the problem may only be solved after many months of careful observation.

¹ Read at a meeting of the Victorian Branch of the British Medical Association on March 5, 1930.

Figure II serves to emphasize this point. It shows three glucose tolerance curves at lengthy intervals on a man of forty-four years of age.

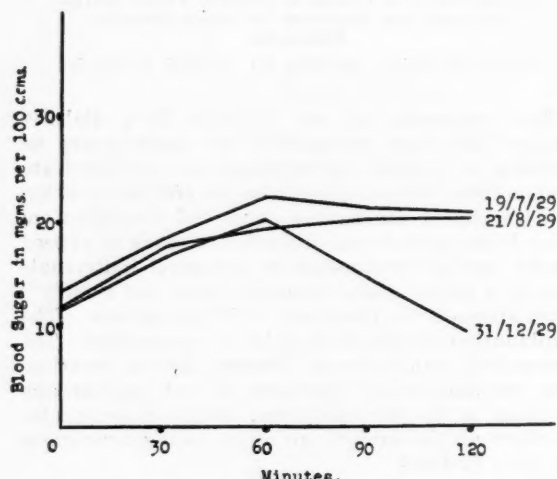


FIGURE II.

The patient was admitted to hospital with an acute appendicitis of forty-eight hours' duration. There was no previous history to suggest diabetes and sugar was first detected in the urine on routine examination on admission. Operation revealed a gangrenous appendix with a local abscess. The first sugar curve was estimated five days after operation. During the first week of convalescence thirty units of "Insulin" daily were required to keep the urine sugar free; the dosage was then gradually reduced and he left hospital on ten units per day. It was subsequently possible to omit the "Insulin" entirely and later to substitute a qualitative dietary restriction for an exact quantitative one. *Pari passu* there has been a distinct alteration in the character of the tolerance curve.

Figure III shows the gradual improvement in the sugar tolerance curves of a patient aged thirty-

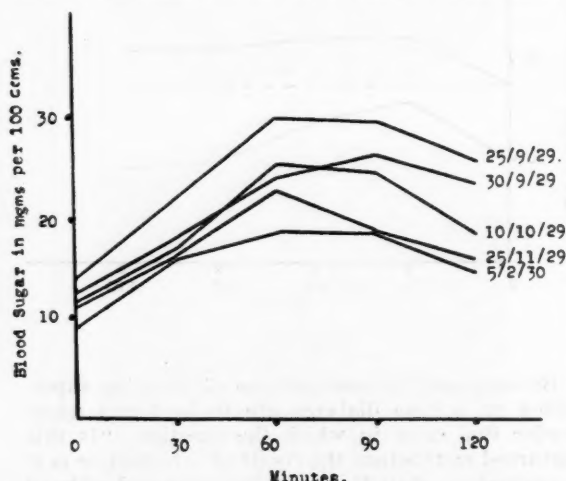


FIGURE III.

seven years who had shown some evidence of chronic pelvic sepsis and was operated upon at the Women's Hospital. Following the operation there has been

a strict dietary restriction for six months and a marked improvement in sugar tolerance has occurred.

It is difficult to consider these two patients as diabetic and it is probable that in the course of time further improvement will be shown in their tolerance curves.

Another aspect of this problem, fortunately rare, but one of great gravity, is the occurrence during an infection in a diabetic patient of a state of "Insulin" resistance. It is often necessary at such a time to increase considerably the "Insulin" dosage in a previously stabilized patient in order to keep the blood sugar within bounds. Very occasionally, however, it is found that huge doses of "Insulin" have little appreciable effect. Such a condition is illustrated in Figure IV.

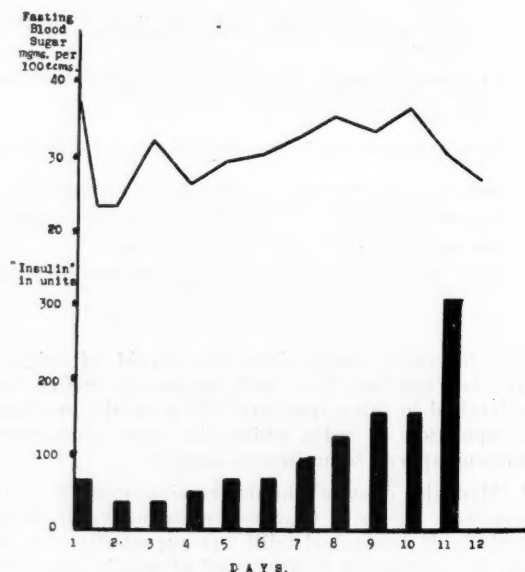


FIGURE IV.

The patient, a woman of sixty-nine years of age, was admitted to hospital with a strangulated ventral hernia of forty-eight hours' duration. She had been known to be diabetic for many months, but had undergone no rigid dietary restriction. Preoperative injection of 60 units of "Insulin" lowered the blood sugar from 0.37% to 0.24% and controlled the acidosis present and the operation was successfully performed under ethylene anaesthesia. For three days her condition remained satisfactory, but there developed then a slowly progressive infection of the abdominal wall, resulting in a spreading gangrene and death. In the latter days of her illness the patient took but little nourishment of any kind, while the powerlessness of "Insulin" to produce any marked change in the blood sugar was painfully apparent.

In view of the effect of sixty units of "Insulin" in the early preoperative stage, it would seem that later something actually antagonized or rendered impotent the massive doses used in the terminal stages of the illness.

Such then are a few of the clinical aspects of the relation of toxic or infective processes to carbo-

hydrate metabolism which present an interesting field for investigation and speculation.

It is impossible in the time at my disposal to do more than touch upon some of the experimental work in this field.

The loss of glucose tolerance occurring during toxæmia in the normal person can be easily reproduced in the laboratory animal. Rosenthal⁽²⁾ in 1914 produced definite evidence of disturbance of carbohydrate metabolism in dogs by poisoning them with diphtheria toxin. Lawrence and Buckley⁽³⁾ in 1926, working on rabbits poisoned with diphtheria toxin, pointed out that there occurs a decrease in the effective action of "Insulin" upon the toxic animals. They also showed that a prelethal rise in blood sugar occurred which was reduced by the exhibition of ergotamine (which paralyses the mobilization of sugar from the liver by sympathetic impulses and by adrenalin). From these results and from certain histological considerations and sundry other generalizations, they conclude that as a result of infection there is a stimulation of the "thyroid-adrenal" apparatus—a conception which was first enunciated by Cramer.

The results of Lawrence and Buckley would appear to be open to criticism along several lines:

1. During the course of their experiments the rabbits were allowed food in the form of oats, bran and cabbage. By the third or fourth day of the toxæmia they ate very little and later not at all. There was apparently no attempt made to control or to check the intake of carbohydrate during the experiments, although accurate observations were being made upon the blood sugar of these animals at that time.

2. They produce no real evidence of any stimulation of thyroid or adrenal in their work, merely commenting upon the histology of these organs thus: "It is quite clear that the toxin has produced exhaustion and marked degeneration in these organs—conditions which are *usually* preceded at some stage by stimulation and overactivity."

3. Arguing along these lines they seek to explain their results by an increased glycogenolysis produced by the above mechanism—a conclusion which is hardly justified on the evidence presented.

It occurred to me that the daily estimation of the glucose tolerance curves of toxic rabbits would perhaps throw some light upon the problem. This work has been done previously in America by Sweeney and Lackey.⁽⁴⁾

The technique of the experiments is as follows:

The animals used were English hutch rabbits, whose weight varied from 1.8 to 2.5 kilograms.

A single dose of diphtheria toxin, calculated to produce death in seventy-two to ninety-six hours, is injected subcutaneously into the tissues of the abdominal wall. The animal's tolerance to five grammes of glucose in twenty cubic centimetres of water administered by stomach tube is then estimated daily, no other food being allowed during the course of the experiment. The blood sugar

estimations are performed by MacLean's method on blood obtained from the marginal vein of the ear.

Figure V represents a typical chart from a series in all of which there is close agreement. The figures obtained are in close accord with those obtained by Sweeney. To eliminate the factor of starvation,

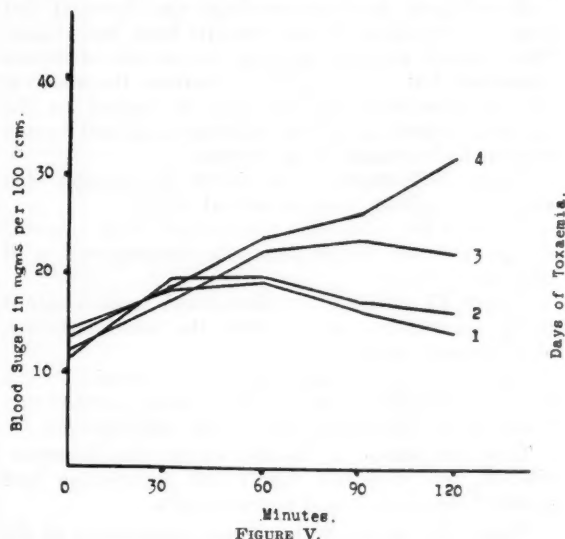


FIGURE V.

Figure VI represents a control experiment on a rabbit to which toxin was not administered. No disturbance of tolerance occurred.

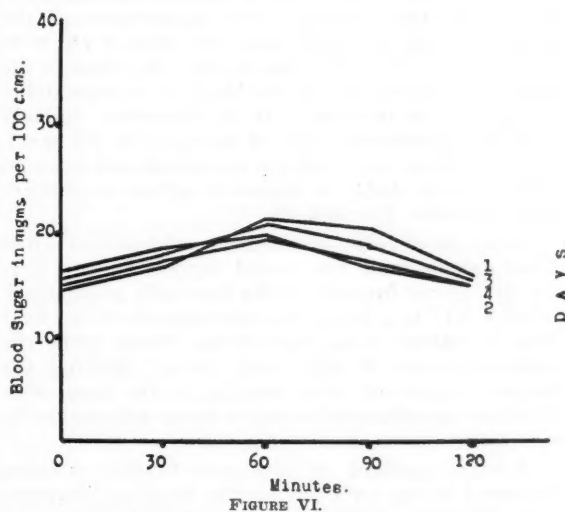


FIGURE VI.

No rabbit in this series, in which a control of the intake of carbohydrate was maintained during the progress of the experiment, manifested a prelethal rise in the fasting blood sugar in any way comparable with that shown in the experiments of Lawrence and Buckley.

No observations have been made upon the temperatures of these rabbits, but Lawrence and Buckley, and Sweeney and Lackey all point out that

there would appear to be a greater loss of tolerance the higher the temperature of the animal.

It is thus seen that as a result of the toxæmia produced there is a definite and progressive disturbance of glucose tolerance day by day until death.

Histological preparations from the thyroid and from the adrenals of these rabbits have been made. They reveal marked spoiling in all the adrenals examined, but I am unable to confirm the observation of Lawrence and Buckley in regard to the thyroid which in all the rabbits examined by me showed little change from normal.

Figure VII shows a low power photograph of a suprarenal gland from a normal rabbit.

Figure VIII, a similar photograph from a rabbit dying thirty-six hours after the administration of diphtheria toxin.

Figure IX is a similar photograph from a rabbit dying seventy-two hours after the administration of diphtheria toxin.

Figure X is a high power photograph of the adrenal medulla from a rabbit dying seventy-two hours after diphtheria toxin was administered.

There are shown in the above slides small hæmorrhages, foci of small round cell infiltration and areas of degenerate and necrotic cells.

Figure XI shows the low power appearance of the thyroid gland in a rabbit which died seventy-two hours after the injection of diphtheria toxin. There is little departure from the normal therein.

The explanation of this disturbance of tolerance is not an easy matter. The appearance of the adrenal gland at death does not suggest an over-activity and Lucksch⁽⁵⁾ has shown a decrease in the amount of adrenalin in the blood of rabbits dying of diphtheria toxæmia. It is, therefore, unlikely that this progressive loss of tolerance is the manifestation of an increased glycogenolysis and it would seem more probable to regard it rather as evidence of a defective glycogenesis.

There is definite histological evidence of gross liver damage and this would further suggest that the glycogenic function of the liver cells is impaired. Figure XII is a low power photograph of the liver from a rabbit dying seventy-two hours after the administration of diphtheria toxin, showing the marked degree of toxic spoiling in the liver cells. Further experimental work is being undertaken in an endeavour to decide this point.

Another method of approach to this problem occurred to me on studying the work of Lawrence and Buckley, namely, to observe the effect of toxæmia upon adrenalin hyperglycæmia produced in the rabbit. Figure XIII represents two sugar curves upon the same rabbit under similar experimental conditions, one before the administration of toxin and the other subsequent thereto. The animal was starved on each occasion for forty-eight hours and then 0.18 mil (three minims) of one in 1,000 adrenalin solution was injected subcutaneously. On the second occasion the rabbit received

a dose of diphtheria toxin which produced death in four days. The curve was estimated forty-eight hours subsequent to the injection. The degree of hyperglycæmia produced was nearly twice that produced under normal conditions. It appears that although there is no evidence of thyroid-adrenal stimulation, as shown in the previous experiments, the animal would seem to have become more sensitive to the action of adrenalin as a result of the toxæmia.

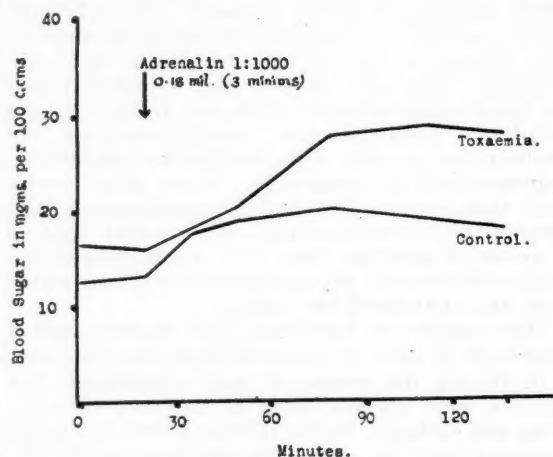


FIGURE XIII.

Such a condition may possibly arise as from a disturbance of insulin-adrenalin balance and herein may be an explanation of the disturbance of glucose tolerance during infection.

More likely, however, this disturbance is even more complex, resulting from a disturbance to a greater or less extent of glycogenic liver function, of glycogenolytic function and of a suppression of endogenous insulin production or of the development of some actual antagonism thereto. However, until further work is performed upon this puzzling subject and until further knowledge is obtained as to the actual effect of insulin under normal conditions, the true explanation of the facts already considered will not be known.

Acknowledgements.

I desire to express my indebtedness to the Trustees of the Felton Bequest for a research grant to carry on this work and also to Mr. A. F. Douth, by whom the accompanying microphotographs have been prepared.

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⁽⁴⁾ R. D. Lawrence and O. B. Buckley: "Inhibition of Insulin Action by Toxæmias and its Explanation," *British Journal of Experimental Pathology*, Volume VIII, 1927, page 58.

⁽⁵⁾ J. S. Sweeney and R. W. Lackey: "The Effect of Toxæmia on Tolerance for Glucose," *Archives of Internal Medicine*, Volume XLI, February, 1928, page 257.

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Reports of Cases.

CANCER AND HEREDITY.

By H. M. MORAN, M.B., Ch.M. (Sydney),
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Sydney.

Clinical History.

On July 30, 1926, Miss F.E., was referred to me by Dr. H. R. Poate with inoperable cancer of the right breast. She had had the disease for over three years, had suspected its nature, but feared a definite diagnosis. A large, ulcerated, fixed and offensively smelling mass occupied the site of the right breast. There were enlarged glands in the right axilla. At Lewisham General Hospital I treated her with radium and on a subsequent date deep X radiation was given by Dr. Molesworth. The local condition cleared up entirely. On April 24, 1927, a mass appeared in the opposite breast with enlarged glands in the left axilla. Shortly afterwards she complained of pains in the hips and legs, evidently due to spinal metastases, although at this stage none was shown by radiography. She died on May 4, 1928, in Sydney Hospital with widespread metastases.

Her family history is as follows: Nothing is known of the grandparents. Her mother died at sixty-two years of pneumonia. Her father died following an operation for "abdominal tumour" at the age of sixty-eight. There were six daughters. The eldest died, aged fifty-eight, of cancer of the left breast, without operative treatment. The second daughter, aged fifty-six, and the third, aged fifty-one, are alive and cancer free. The fourth died of cancer of the breast three years after an operation. The fifth was the patient whose history is given above. The sixth died, aged thirty-six, of cancer of the breast without having surgical treatment.

Comment.

The case here described is similar to many quoted in evidence of an hereditary factor in malignant disease. The proof of such a contention is based on two chief grounds, one of clinical experience, the other of experimental work done on animals. The literature provides records of many family histories in which cancer affected successive generations. Napoleon Bonaparte is always mentioned, since he himself, his father, his brother Lucian and two sisters are alleged to have died of cancer. Broca's case (1866) is classical. In the first generation a mother died of cancer of the breast; in the next generation comprising four daughters, two died of cancer of the breast and two of cancer of the liver. In the third generation of eighteen children ten died of cancer and in the fourth of ten children one died of the same disease. Paget collected statistics on the subject and traced a tumour tendency in the relatives of 23.6% of 254 cancer-patients. Butlin⁽¹⁾ found a cancer history in 37% of sufferers from cancer of the breast. Roger William⁽²⁾ fixed the percentage at 28.2%. W. F. and C. Ph. Wassink,⁽³⁾ of Amsterdam, affirm their belief in the heredity factor of cancer and claim that of 258 patients with cancer of the breast 76 of the patients had cancerous parents, 30 of them suffering from breast cancer. On the other hand, the investigations of Campiche and Lazarus Barlow give a percentage of only 15.6.⁽⁴⁾

Certain disorders of growth have been long known to show a disposition to affect families. In retinal tumours

of a gliomatous nature the tendency is believed to be transmitted as a dominant. Adenomatosis of the large intestine, multiple exostoses, multiple neurofibromata and lipomatosis are well recognized as frequently occurring in successive generations. An interesting example of multiple lipomata is given by Leven. Darier believes in the hereditary predisposition to pigmented naevi and moles.

In spite of the apparently numerous examples quoted in the literature, from a statistical point of view the data are meagre. A diagnostic error is often likely to creep in because of the absence of histological control. Verbal communications by the relatives of patients are notoriously inaccurate. The element of coincidence and chance has always to be reckoned with. In such collections one is prone to consider only the positive evidence. All that can be said is that the numerous examples of cancer in successive generations have a suggestive interest. The basis of all statistical investigation is the law of large numbers and we can say definitely that in this subject the numbers are still negligible for the purpose of any positive conclusion.

The experimental evidence has been obtained from breeding experiments chiefly in mice. The spontaneous occurrence of cancer in certain strains has been observed in every laboratory where mice are bred. Maude Slye⁽⁵⁾ undertook laborious breeding experiments and her first conclusion was that cancer in mice behaved as a unit character, inherited as a Mendelian recessive. This view she later modified by saying that it is not the cancer that is transmitted, but a tendency for cancer to develop from a given provocation. In her essay "Heredity in Relation to Cancer" she states that the tendency to neoplasms of specific types and specific organs is transmitted, but that more than one unit character is involved. She claims that the tendency to cancer of the breast, liver, lung or kidney is inherited as a recessive character. The rare condition of thyroid tumours in mice which she found to occur in one strain of the Japanese waltzing type, is also said to behave in accordance with what one would expect from a Mendelian recessive; but Slye⁽⁶⁾ believes that the constant vibratory motion and the position in which the head is held in these waltzing strains may be the provocative irritation factor.

The conclusions of Slye are strongly opposed by other investigators. Coulon and Boez,⁽⁷⁾ at Strasburg, in control experiments could not confirm her results. In their researches they took great care to exclude the hypothetical factor of contagion. C. C. Little⁽⁸⁾ and Clara J. Lynch strongly contested the statement that malignant disease in the breast is inherited as a recessive character. Lynch⁽⁹⁾ whose breeding experiments are much fewer than Slye's, made fifteen crosses between females of a strain in which cancer of the breast was common, with males from outside sources and in every case but one mammary cancer appeared in the F₁ generation. Since it is extremely unlikely that fourteen of the unselected males were heterozygotes (which they would need to be if the tendency to breast cancer were recessive), Lynch concludes that the tendency behaves as a dominant. In Cockayne's opinion⁽¹⁰⁾ the disease which Slye has studied, is rather a disorder of growth, an adenomatosis of the mammary gland inherited as a dominant, and in which a high proportion of cancers develop.

Experiments in the natural immunity of mice to transplantable tumours have further confirmed the belief that such an immunity is inherited. Levin and Sittenfeld⁽¹¹⁾ describe the inoculation of 20 rats, offspring of naturally immune rats, with failure in 15 of them, whereas only two out of 14 controls proved refractory. The general opinion is that susceptibility is inherited in accordance with Mendelian laws, but that the coexistence of several other factors is necessary.

Granted the existence of an hereditary factor in the cancer of animals, can we accept the argument by analogy for man? Human cancer is not a single entity; the term embraces a wide variety of conditions. Each of these conditions must have several other ætiological factors special to itself and the rôle of the heredity factor relatively important in one variety may be relatively negligible in another. Many pathologists believe that the inherited tendency follows the transmission of tissues having certain qualities and would thus be a question rather of "terrain"

(Roussy).⁽¹²⁾ We are indeed far from the stage in which a confident opinion can be expressed in the matter and still further from agreeing with Wachtel⁽¹³⁾ who, applying the Slye conclusions in full to man, has suggested that procreation be forbidden in "les familles chargées de ce mal héréditaire." But the time is long since ripe for the appointment of a geneticist who will investigate the incidence of cancer in successive generations in Australia.

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Reviews.

PÆDIATRICS.

AMONG the modern masters of pædiatrics was Clemens Pirquet, successively physician and teacher at Johns Hopkins and Breslau and finally director of the great University Clinic at Vienna. The introduction of the test which bears his name, and his work on allergy and serum sickness were crowned, as he thought, by his introduction in 1917 of the dietetic system which goes by the name of the Nem system.

In "The Nutrition of Healthy and Sick Infants and Children" Professor Pirquet had as collaborators E. Nobel, the present professor and R. Wagner, the assistant professor at the Children's Hospital of the University of Vienna.¹ In the preface the authors write: "The book represents our personal experience at the University Children's Hospital, and is therefore subject to all the advantages and disadvantages of a subjective work." This charming modesty was characteristic of the man who wrote it.

It is difficult not to speculate as to what would have happened had Clemens Pirquet been the first to apply accurate methods to infant dietetics. For there is no doubt that the "Nem" system which he elaborated, had many good points. Its unit was, as most people know, the energy content of one cubic centimetre of milk—about

0.67 calorie. The amount required was calculated, not as in other systems from the weight, but from the sitting height. The square of the sitting height or "si qua" gave the number of nems with which the child could possibly deal. It was called the "nemsqua." But in practice it was too large, so it was divided into ten parts, decinemsqua. Further, the "nem" is multiplied and divided like any other metric unit, Greek prefixes signifying multiplication, for example, hectonem = a thousand nems; Latin prefixes division, for example, decinem = one-tenth of a nem. From this was built up a most ingenious and practical system. Tables are given showing the composition and nem values of ordinary foods—most necessary tables.

Such a system seems reminiscent of the student who "boiled down" Gray's "Anatomy" into three pages of keywords and failed because he could not remember whether "uduud" stood for the branches of the external carotid or the articular surfaces of the palate bone. But apart from these special systems (which a physician lately returned from Vienna states are no longer used even there), this small book contains little that is not admirable.

Individual consideration of each patient is declared to be imperative; there is no question of a Procrustean bed to which every infant must be made to conform.

Some of the more special studies contain statements with which English readers may disagree; thus his dietetic treatment of colic disease (or Herter's infantilism as Pirquet prefers to call it), with its 300 cubic centimetres of milk daily, would receive little support. Dysentery again is treated with "whole milk to which sugar has been added," a method in this country at least very apt to cause trouble, if not disaster.

Vitamins are discussed at some length; as might be expected from the experiences of the Viennese during the lean years of 1915 to 1922, the deficiency of these essential factors is emphasized in detail and recipes are given for preparing foods rich in vitamin C, for example, apple, tomato, cabbage and turnip, in addition to the more commonly used fruit juices. It is rather a manifestation of ingratitude that the work of Dr. Chick and her colleagues who did so much to save the Viennese children from avitaminosis in 1919 and 1920, should be dismissed in a single line.

There is a moderately complete chapter on vomiting, but the distinction between simple pylorospasm with no muscular alteration and pyloric stenosis with muscular hypertrophy is not made clear. Both medical and surgical treatment are fully discussed and the latter is regarded as to be undertaken only as the result of failure of medical treatment. Many pædiatricians regard operation as the method of choice in treating organic stenosis.

The chapters on acute and chronic diarrhoea with (or without) vomiting are those most likely to appeal to the average reader. As usual, much use is made of illustrative cases, with very complete (but untranslated) charts and really convincing photographs of the children.

There are chapters on nutritional treatment in various diseases—myxœdema, enuresis, anorexia, diabetes, nephritis, obesity and goitre. There is comparatively little in these that is new or noteworthy.

The book is translated into quite tolerable American, though sometimes the meaning is far from plain and occasionally the less usual English word is used.

The illustrations, though small, are admirably illustrative, witness the scorbutic infant on page 91 or the marantic infant on page 85.

The charts suffer badly from not being translated; even the provision of a glossary makes them most trying to the non-German reader. Presumably this is done on the score of economy in printing costs, but nevertheless it detracts from the value of the book. The printing and paper are, as may be expected, excellent and there are very few misprints. The index is easily the weakest part of the whole book; it is quite useless in any search for obscure points.

In spite of the defects which make it of little use to the ordinary practitioner, the book is written with a charm and clearness only found (and not often found) in the works of those who are in daily contact with their subject. It is essentially a book of great interest to the discriminating specialist.

¹ "The Nutrition of Healthy and Sick Infants and Children for Physicians and Students," by E. Nobel, C. Pirquet and R. Wagner; Authorized Translation by Benjamin M. Gasul, B.S., M.D.; 1929. Philadelphia: F. A. Davis Company. Royal 8vo., pp. 258, with illustrations. Price: \$3.50 net.

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Legislation and the Treatment of Venereal Disease.

In the successful treatment of venereal disease from the public health point of view there are two essential factors. In the first place all infected persons must be brought under treatment and in the second place they must be kept under treatment until a certain standard of cure has been attained. It was with these objects that the *Venereal Diseases Acts* were introduced, first into Western Australia and subsequently into the other States of the Commonwealth, excepting South Australia. South Australia is excepted because the act in that State, though ready for promulgation, has never been brought into force. Good results have been claimed and, it is believed, obtained in Western Australia, but it is certain that even there many infections are not notified and that numbers of patients go on their way untreated, either ignorant of their infectivity or careless of its dangers to others. In the more densely populated States the administration of the acts has not been attended by the success originally expected. Dr. Robert Dick, the Commissioner of the *Venereal Diseases Act* in New South Wales, speaking at the third session of the Australasian Medical Congress (British Medical Association) last September, went so far as to say that though it might be a simple matter to get good results from legislation in a small city such as Perth, compulsory notification in large cities was a hopeless failure.

The reason for this failure may perhaps be gathered from the latest report received from the Department of Public Health for New South Wales, that for the year ended December 31, 1928. During this period 5,226 notifications of venereal disease were received, a decrease of 445 as compared with the previous twelve months. It is not reason-

able to conclude that the number of infections in the State was lowered for the twelve months to this extent; it must mean that the infections were not notified. An indication that all the infections are not notified is given by the fact that only thirty-four notifications were received from the Newcastle District for the twelve months; this will be accepted by no one as indicating the incidence of venereal disease in that part of the State. According to the provisions of the act, if a patient discontinues treatment before he is cured, his name and address must be forwarded to the Commissioner in order that a resumption of treatment may be secured. During 1928 the names of 1,113 defaulting patients were received; of these 833 were males and 280 females. Because wrong information had been supplied in the first instance by these patients, 602 of the letters sent by the Department were returned undelivered by the postal authorities. Of the 511 defaulters who received their letters, 441 resumed treatment and in regard to the remaining 70 persons finality had not been reached. For the past eight years the average of defaulters has been 23.4% and the average of letters returned undelivered has been 51.34%. Some of the reasons given by the patients for not having continued treatment are interesting. Some discontinued because they were obliged to take up work in the country, some because they believed they were cured and there were no outward signs of the disease, and some because they were not satisfied with the treatment received. It may be taken that these figures for New South Wales will apply in great measure to other States, so that any suggestions made for improvement of conditions in the former will apply equally to the latter.

Some medical practitioners will doubtless argue that failure of notification does not necessarily mean that affected persons are not treated. By this statement they would, of course, be convicting themselves of failure to comply with the provisions of the act, in other words, of grievous dereliction of duty. These persons would probably be the first to find fault with a government department for failure to administer an act. In spite of this possible argument it must be concluded that neither of the essential factors previously mentioned, is operative at the present time; all infected persons are

not brought under treatment, neither are they kept under treatment until they are cured.

The remedy is admittedly difficult to find. It will be found only by the cooperation of the private medical practitioner and the Department of Health. It may be taken for granted that the average medical practitioner is able to recognize an acute venereal infection when he sees one. At the same time it must be remembered that when complications arise, the original infection may be masked. Dr. R. A. Willis has recently shown in this journal how the late stages of syphilis may be confused with other conditions. When he has recognized the disease, it is the duty of the medical practitioner to comply with the act and notify the infection. There is no reason why those who "move in the upper venereal circles" should receive special treatment in this regard. When the practitioner has notified the infection he should be prepared to undertake the treatment. If his knowledge is not sufficient, he should send the patient to another practitioner skilled in this form of treatment. If such a practitioner is not available, he should make himself *au fait* with the latest methods. There came under notice recently an instance in which a newcomer to an important country centre created a mild sensation by applying, for the first time in the history of the district hospital, local treatment to the *cervix uteri* of a female patient with gonorrhœa. The part to be played by the Department is by no means so simple as that of the private practitioner. It would appear that the several departments in the Commonwealth are doing their best to carry out the provisions of the several acts. A rigid enforcement is necessary. It is an exceedingly difficult matter to prove failure by a medical practitioner to report an infection. If failure can be proved, prosecution should follow. It is more difficult to cope with the habit of patients of giving wrong addresses. In this regard the practitioner, be he private or departmental, should seize the opportunity of advising patients as to the paramount necessity of continuing treatment. Perhaps if wider powers were given to the Commissioner in regard to the examination of suspected persons, good would result, but the most effective way of extending the treatment of venereal diseases lies in the provision of more clinics. In

Melbourne there is a continuous and effective clinic for the treatment of infected persons. New South Wales has threatened to follow this example; it is time that facilities were given to the Commissioner in that State to carry out his wishes.

Current Comment.

BRONCHIECTASIS.

THE radiographical definition of the bronchial tree has become so simple since the introduction of iodized oil as a contrast substance that knowledge concerning bronchiectasis has increased very greatly within recent years. Bronchiectasis is no longer regarded as an uncommon condition and much has been written lately concerning it. Alton Ochsner has recently published a paper in which he reviews the rather extensive literature on the subject and discusses treatment at some length.¹ He mentions the various theories concerning ætiology and, while he believes bronchitis to be the most fruitful cause of the condition, he lays stress on the importance of sinusitis as a cause. At the Australasian Medical Congress (British Medical Association) in Sydney in August, 1929, Graham Brown and Stuart Cross strongly emphasized this point. The maxim might well be laid down that an examination should be made of the accessory sinuses of every patient suffering from symptoms suggestive of bronchiectasis.

In discussing pathology Ochsner suggests that a functional dilatation of the bronchi precedes the anatomical dilatation. After treatment with iodized oil, bronchi which have been proved radiologically to be dilated, have returned to normal. This is impossible after the advent of anatomical dilatation, accompanied as it is by permanent tissue changes. He fails to note that pulmonary fibrosis may be an important feature and, in fact, the basic pathological change, as pointed out by Galbraith at the recent congress in Sydney.

The description of signs and symptoms usually given in text books is accurate only for the condition in its later stages. In the early stages radiological examination after injection of iodized oil is of great assistance in the diagnosis and in fact sometimes reveals bronchiectasis when no clinical signs can be elicited. According to Ochsner a fluoroscopic examination should always be made in order that the manner of filling of the bronchi may be observed. The oil sometimes passes through to the alveoli and may so obscure the bronchial outline that a skiagram, even if taken sixty seconds after the contrast substance has been introduced, may be valueless.

In the treatment of bronchiectasis the two surgical procedures most widely practised are

¹ The American Journal of the Medical Sciences, March, 1930.

artificial pneumothorax and thoracoplasty. Though these methods appear to have been moderately successful in the hands of some workers, results generally are unsatisfactory. The rationale of lung collapse may also be questioned. At the congress in Sydney last year Britten Jones said: "I cannot conceive how a temporary pneumothorax could improve a condition whose pathological background is considered to be fibrosis. I think rather that the expansion of the lung should be encouraged." Ochsner regards the more heroic operation of lobectomy as the ideal treatment when the disease is limited to one lobe, which is seldom. A very high mortality is associated with this procedure and while in selected cases it sometimes succeeds, its attendant risks are so great and it is so likely to be followed by permanent bronchial fistula that its performance save in very few instances scarcely seems justified. The author has treated 112 patients by repeated injections of iodized oil into the bronchi. In all he has used this method either for diagnosis or treatment on 1,500 occasions without any ill effect. There was some evidence of iodism in six instances, but the symptoms were never alarming and always disappeared within forty-eight hours. Several authors have reported adversely on the use of iodized oil in pulmonary tuberculosis and Ochsner agrees that it should be employed with caution in this condition. He states, however, that he has used it successfully in the treatment of the fibroid type of phthisis when the patient is suffering more from a secondary infection of his cavities than from actual tuberculous intoxication.

Of the author's patients 32% were symptomatically cured; in 12% of these radiological examination revealed a return of the bronchi to normal; 36% were relieved but relapsed temporarily following an acute respiratory infection; 32% were improved and were still under treatment at the time of writing.

He prefers the method of introducing iodized oil by the mouth rather than direct injection into the trachea. He has never known a patient to object to a refill done in this manner. He makes no mention of the necessity for treating any coexisting disease of the upper respiratory passages. This is an obvious line of attack if the view that paranasal suppuration bears a causal relationship to bronchiectasis be accepted. Ochsner's results are better than any obtained by ordinary medicinal treatment and they should encourage other workers to persevere along similar lines.

UNDESCENDED TESTIS.

THE problem of what is known as the undescended testis is important from several points of view. An imperfectly descended testis is commonly believed to be exposed to trauma and it has been held by Russell Howard that it is more likely to be affected by neoplastic change than a normally placed testis.

In addition there is the psychological effect on an individual of the knowledge that he is suffering from an abnormality of the sexual organs. Three types of operative procedure have been practised for the relief of this condition. Attempts have been made to place the testis in the scrotum, it has been placed in the extraperitoneal tissues and it has been removed. The ideal to be sought is, of course, the placement of the organ in the scrotum. This may be a matter of some difficulty. H. Tyrrell-Gray has recently described an operation for which he claims a high percentage of success.¹ He points out that mobilization of the spermatic vessels from the peritoneum is difficult, if not impossible, but that, if the peritoneum together with the adherent vessels and the large intestine be extensively mobilized, the degree of lengthening of the cord obtainable will depend on the elasticity of the peritoneum and therefore to a large extent on the age of the patient. For details of the operation the reader must consult Tyrrell-Gray's article. In every instance the *gubernaculum testis* is divided and this is commonly regarded as being concerned in the normal descent. He describes three conditions under which the testis does not lie in the scrotum: post-operative retained testis, mobile testis and undescended testis. In mobile testis the organ may be retracted into the inguinal canal by reflex action. He classifies undescended testis into that lying in its own *tunica vaginalis* and that lying in a patent *processus vaginalis*. After thirty-one operations he had twenty "perfect results" (about 66%). He concludes that the best age for operation is between five and nine years and that it is useless to wait for natural descent and development.

In 1922 Alan B. McCutcheon published in this journal the results of an investigation into what he termed "delayed" testis. The reason for his choice of this term is obvious from his findings. Among 1,255 boys under fifteen years of age he found 9.8% in whom "delayed" testis was present. Among 590 boys over fifteen years of age the percentage was 0.16. McCutcheon recognized the effects of reflex stimulation on what Tyrrell-Gray calls mobile testis, and he regarded as a "delayed" testis one which was not actually in the scrotum or which could not be brought down or induced to stay in the scrotum without tension. He held that the normal hurrying up of developmental processes associated with the onset of puberty plays a part in hastening the completion of the descent of the testis. It must be concluded that if McCutcheon's observations were reliable, the use of Tyrrell-Gray's operation on boys before puberty is unjustifiable. The question may be asked as to whether McCutcheon included among his "delayed" testes examples of Tyrrell-Gray's "mobile" testes. So far as is known McCutcheon's observations have not been confirmed. This should be done. The observations could easily be made by the medical officers of the Education Departments in the several States of the Commonwealth.

¹ *The British Journal of Surgery*, April, 1930.

Abstracts from Current Medical Literature.

GYNÆCOLOGY.

Orthopædic Gynæcology.

F. KERMAUNER (*Wiener Medizinische Wochenschrift*, January 1, 1930) reviews his results in the treatment of abdominal pain and backache. They were often disappointing. He has passed through the craze for operation on all sufferers and makes an earnest plea for careful radiographic examination, especially of the skeleton. Abnormalities of the vertebrae and the joints can frequently be noted. The results of treatment are not dramatic and often take a long time. Each patient must be carefully studied and much time spent on the management. Patience to a great extent is also demanded of the sufferer, but the final result is worth while and must be pursued until a quicker method of treatment has been evolved.

Dysfunction of the Ovary.

P. WERNER (*Wiener Medizinische Wochenschrift*, January 4, 1930) states that abnormalities of ovarian function may occur at puberty, during the middle of reproductive life and again at the menopause. Abnormalities occurring at puberty are usually associated with hypoplasia of the genital tract. Disturbances at the menopause are largely physiological, while those in middle life may be associated with abortion and difficult labour. In most cases the menses are scanty and varying periods of amenorrhœa may occur. When such patients become pregnant, abortion is likely. Patients with hypoplasia are liable to toxæmia when they are pregnant and ovarian therapy is valuable in the treatment. Premature birth is common and even if the pregnancies go to term, the children are puny. Hyperflexion occurs during labour and as many of the patients present a degree of generally contracted pelvis, obstruction is common. Despite the smallness of the child, perineal lacerations are common, owing to rigidity of the soft parts. In general such patients are doll-like in appearance with small hands and feet and an infantile pelvis. Abnormalities in the secondary sexual characteristics are noted and uterine displacements are common. Naturally all these symptoms are not necessarily seen in every patient. Attention to general hygienic measures is important, coupled with the treatment of anæmia as well as the administration of ovarian preparations. The author refers particularly to the effect of change of climate in many instances.

Anæsthesia in Obstetrics and Gynæcology.

K. HEIM (*Monatsschrift für Geburtshilfe und Gynäkologie*, January 1930) presents a survey of the various methods of anæsthesia adopted in obstetrics and gynæcology. He prefers

lumbar anæsthesia for abdominal operations, while for vaginal procedures the parasacral route is chosen. Both the intravenous use of "Avertin" and the use of "Perccain" promise good results. Minor vaginal surgical operations can be done with local infiltration anæsthesia. The infiltration of the abdominal wall with a local anæsthetic is the method of choice for Cæsarean section. Further injections of the round and broad ligaments will permit the removal of adnexal tumours, provided they are not of excessive size nor complicated with dense adhesions. When a general anæsthetic is contraindicated, infiltration of the abdominal wall and the hypogastric nerve together with parasacral injections is highly recommended.

Tubal Insufflation for Sterility.

L. WILLBRAND (*Monatsschrift für Geburtshilfe und Gynäkologie*, January, 1930) describes his results with tubal insufflation in 406 cases of sterility. Primary sterility was twice as common as sterility of secondary origin. Among the primary group 38% of the patients had hypoplasia of the genitalia and only 14% definite inflammatory lesions. In 90 instances no cause for the sterility could be discovered and the author considers that in many of these there may have been some inflammatory cause which was dormant and could not be detected by the diagnostic means at disposal. Among the patients with secondary sterility a history of a previous septic labour was noted in 20.7%, a former operation was blamed in 4.4% and a septic abortion in 20%. The only contraindications to insufflation are a rise of temperature, fresh infections of the genital tract, frank gonorrhœa or the suspicion of the same, the presence of leucorrhœa and the menses. Following on insufflation pregnancy occurred in 21% of the patients with primary and in 30% of those with secondary sterility.

Radiation for Salpingitis.

J. JANAKI (*Monatsschrift für Geburtshilfe und Gynäkologie*, February, 1930) refers to the value of small doses of X rays in the treatment of acute and chronic salpingitis and gives the histories of seven patients so treated. The technique employed in all cases was 80 kilowatts, 8 milliamperes and 30 centimetres focal distance applied to a dorsal field measuring 18 by 20 centimetres. The rays were passed through a five millimetre zinc and one millimetre aluminium filter. Each patient received 15% of the erythema skin dose. From his experience the author does not recommend its use in acute cases. While temporary alleviation of pain and fever occurs, the inflammatory process is liable to flare up and produce metastatic complications. On the other hand, chronic infections are undoubtedly improved. The applications may consist of a single 15% dose or a succession of smaller doses—3% on six successive days. The course can be repeated after an interval of one

month and a couple of such courses are generally sufficient to cure the trouble.

Salpingitis.

ALBERT H. ALDRIDGE (*American Journal of Obstetrics and Gynecology*, March, 1930) has made a study of the results of operation in 1,066 cases of salpingitis. The diagnosis in every instance was made as a result of the microscopical examination of tissue removed at surgical operation. He concludes that laparotomy for the cure of salpingitis should be avoided if the infection is still active. Dangerous smouldering infections may be present in the pelvis and even after bimanual examination these infections may not be accompanied by leucocytosis or fever. The sedimentation time, if determined as a routine, will help to reveal the existence of active infection. If abdominal operation be undertaken for salpingitis while the infection is still active, not only will the mortality be high, but there will be excessive morbidity from shock, sepsis and defective wound healing and conditions will result which call for subsequent radical operation. If operation seems unavoidable after a prolonged period of convalescence, laparotomy should not be attempted until the inflammatory exudate about the focus of infection has been absorbed and the leucocyte count, temperature and sedimentation time are normal. Drainage of the peritoneal cavity by the vaginal route is superior to drainage by other methods.

OBSTETRICS.

Treatment of Puerperal Sepsis.

H. SCHOTTMÜLLER (*Klinische Wochenschrift*, January 4, 1930) reviews in detail the bacteriology of puerperal sepsis. He considers that the presence of pathogenic organisms in the vagina during pregnancy increases the possibility of sepsis later. From his experience, provided the focus of infection remains in the endometrium, any bacteriæmia produced is not fatal. If, however, it be associated with lymphatic involvement, the mortality is raised to 50%, while phlebitis causes at least a 90% mortality. Bacterial invasion of the cardiac valves is invariably fatal. The focus of infection, therefore, in generalized infection is to be found in the endometrium of a uterus not completely emptied, a lymphangitis of the parametrium, thrombophlebitis of the parametrial veins or an endocarditis. Lymphatic infection is generally due to hæmolytic streptococci. The area of infiltration is not painful to touch. Thrombophlebitis is much more common. The acute form is due to staphylococci or hæmolytic streptococci and is usually fatal. Anaerobic streptococci are responsible for the commoner chronic variety. He advises the use of scarlet fever antitoxin. Vaccines are useless for the acute infections, likewise protein therapy. Occasionally ligation of the veins proves successful; hysterectomy

is to be employed only for gas bacillus infection and tetanus. The author believes in the use of the curette both for post-abortion and puerperal sepsis and has seen no ill effects from active interference.

"Avertin" Narcosis.

D. NAUJOKS (*Monatsschrift für Geburtshilfe und Gynäkologie*, February, 1930) has investigated in detail the fatal cases reported following "Avertin" narcosis and considers that many have been due to errors in technique. Young women stand much larger doses than those in later life. The dosage must be suited to each patient and by means of carbon dioxide inhalations and injections of glucose fatalities should be avoided. A dose of 0.12 gramme per kilogram body weight is given up to a maximum of eight grammes. In fat persons this maximum must not be exceeded. Damage to the liver and kidneys has never been observed. Hyperæmia of the rectal mucosa occurs, but never in his experience has the author seen tenesmus or hæmorrhage. He reports an exanthem following its use which resembled urticaria and covered the trunk and disappeared in a few hours. "Avertin" is of great value at the end of the first stage of labour and also during the second stage. He has found it to be useful in eclampsia when doses up to six grammes controlled the fits. The details of eight cases in which it was used, are appended.

Cæsarean Section.

W. B. THOMPSON (*American Journal of Obstetrics and Gynecology*, March, 1930) reports that a series of 1,322 Cæsarean sections was performed in twelve Los Angeles hospitals in the period 1923 to 1928 inclusive. Of these operations 1,060 were of the classical and 262 of the low type. The mortality was 4.2%. The author holds that, though these figures are an improvement on those of similar neighbouring communities, the operation is often performed without adequate indication, that the records are poorly kept and that proper judgement is not exercised in regard to type and time of operation, the anæsthetic and the general care of patients.

The Diagnosis of Pregnancy.

ZONDEK and ASCHHEIM found that the urine of pregnant women contained large amounts of anterior pituitary hormone and they elaborated a technique for the diagnosis of pregnancy by the detection of anterior pituitary hormone in the urine. The urine of the patient was injected into infantile mice and the resulting reactions consisted in: (i) Ripening of the ovarian follicles and the beginning of œstrus, (ii) the production of hæmorrhagic points in the ovary, (iii) the formation of *corpora lutea atretica*. J. H. HANNAM (*Proceedings of the Royal Society of Medicine*, March, 1930) points out that the second and third of these reactions should always be present if the urine

is that of a pregnant woman. He has modified the technique of Zondek and Aschheim. He uses for each test one albino rat, aged six to eight weeks, he injects three cubic centimetres of the suspected urine subcutaneously in one dose and kills the animal ninety-six hours later. With specimens of urine from forty-one pregnant women all but three yielded a positive reaction. With the urine from fifteen women with regular menstrual cycles there was no reaction. With the urine of forty-two women suffering from various diseases there were twelve incorrect results. The urine of two men out of five tested yielded a reaction. The author claims to have confirmed the finding of Zondek and Aschheim that the urine of pregnant women contains large amounts of anterior pituitary hormone. He states that the presence of the fœtus is the essential factor in the production of this phenomenon.

F. DICKENS (*Proceedings of the Royal Society of Medicine*, March, 1930) records his results with the Zondek-Aschheim test for pregnancy. Of one hundred and twenty-five pregnant women one hundred and twenty-two gave the reaction. Of eighty-two non-pregnant women only one, a woman at the menopause, gave a positive result. The author describes this as the most disturbing result yet obtained. He compares his percentage of error, 3.2%, with Hannan's 7.2% error. He attributes the latter to the fact that Hannan used rats instead of mice. He regards the Zondek-Aschheim test for pregnancy as the most satisfactory hitherto described.

Interstitial Pregnancy.

H. WOLF (*Monatsschrift für Geburtshilfe und Gynäkologie*, February, 1930) gives in detail the histories of four cases of interstitial ectopic pregnancy. In three the right tube was involved and this is in keeping with the literature on the subject. The author considers that appendicitis and descending infection may be an ætiological factor in deciding the site of the pregnancy. The anatomical details of the pregnancy are discussed at length. The majority was not diagnosed as such prior to operation, although the increase in width of the uterus gave rise to suspicions.

Treatment of Retained Secundines.

H. SAENGER (*Deutsche Medizinische Wochenschrift*, January 17, 1930) reports two cases of severe post partum hæmorrhage due to the retention of pieces of placenta and comments on the correct treatment of such complications. The correct conduction of the third stage of labour is emphasized as the most important means of preventing retention of placental fragments. The author is not in favour of Credé's method of expression and prefers to wait for a considerable period for natural separation, unless hæmorrhage occurs. The dangers following curettage late in the puerperium are illustrated in a case history. The removal of a placental polypus in the puerperium

demand a careful technique. He utters a warning against the risk of perforating the soft puerperal uterus with the added chance of septic infection. Retention of placental remains is not the only cause of hæmorrhage in the puerperium and if the os be closed, the uterine cavity should be considered to be empty.

Treatment of Severe Post Partum Hæmorrhage.

H. NAHMMACHER (*Münchener Medizinische Wochenschrift*, January 31, 1930) describes in detail the construction of the forceps of Henkel which are used to compress the uterine arteries in severe post partum hæmorrhage. The indications for their use are: (i) Severe hæmorrhage resistant to plugging, (ii) hæmorrhage from cervical lacerations, (iii) hæmorrhage following *placenta prævia*, (iv) in rare cases after Cæsarean section. In such cases the cervix is grasped with volsella and pulled down to the vulva. It is then swung to one or either side and the Henkel forceps are applied to the cervix and adjacent uterine wall. By this means the parametrial tissue is securely clamped and both uterine vessels can be secured. Provided the bladder is emptied before application of the forceps, no damage is possible to either it or the ureters. The clamps are removed after three to five hours in cases of pure uterine atony or sooner if contractions return. Somewhat longer may be required for cervical lacerations, but twenty-four hours should not be exceeded even in these cases.

Toxæmia of Pregnancy.

F. C. IRVING and J. V. TAYLOR (*The American Journal of Obstetrics and Gynecology*, June, 1929) have issued a preliminary report on a series of experiments carried out on pregnant women suffering from eclampsia. Acting upon the hypothesis that eclampsia results from a toxin circulating in the blood and that venesection has been used to improve the condition of patients in the convulsive stages, the authors devised a method of attempting to remove the toxin from the blood without unduly reducing the vital elements. One thousand cubic centimetres of blood were drawn off from a vein into four bottles of two hundred and fifty-five cubic centimetre capacity; each was filled to the two hundred and fifty cubic centimetre mark. These were then centrifuged and the plasma syphoned off. Salt solution was added and the centrifuging process repeated. Assuming that the body of the patient contains five litres of blood, the authors claim that 20% of the toxin has been removed from the circulation. In five eclamptics prompt recovery followed. In four cases of preclampsia toxæmia in which the blood pressure remained elevated after delivery, the use of this method resulted in disappearance of albumin from the urine and the reduction of the hypertension. Chronic nephritis did not show any improvement and the number of red cells manifested but little change as a result of the treatment.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Savings Bank Chambers, 21, Elizabeth Street, Sydney, on April 24, 1930, Dr. E. M. HUMPHREY, the President, in the chair.

Radiology in Examination of the Lungs.

Dr. F. GUY GRIFFITHS read a paper entitled: "A Clinician's Evaluation of X Ray Examination of the Lungs" (see page 800).

Dr. WILFRED EVANS read a paper entitled: "Pulmonary Tuberculosis in Childhood, with Special Reference to its Radiological Aspect" (see page 803).

Dr. J. G. EDWARDS read a paper entitled: "Chest Radiography" (see page 804).

Dr. SINCLAIR GILLIES said that they had heard the subject discussed from two different points of view, that of the physician with a guarded admiration for the radiologist and of the radiologist with no admiration for the physician. They both had their day. He recalled one case in which the physician had been assured by the radiologist that no hydatid was present. The physician had assured the patient and the patient had promptly coughed up a hydatid cyst. In another instance a patient had had a severe hæmoptysis. His friend, Dr. S. A. Smith, had endeavoured with the help of the radiologist to locate the source of the hæmorrhage. It had been decided that one lung was involved and an artificial pneumothorax had been induced. Three days later the hæmorrhage had recurred as severely as before. X ray examination had revealed tuberculous involvement of the uncompressed lung. The lung which had been treated had then been allowed to expand and artificial pneumothorax had been induced in the second lung which was said to be tuberculous. He had felt certain that this would arrest the bleeding, but to his surprise, three days later a second recurrence of bleeding had taken place. The lung had been allowed to expand and neither gave evidence of tuberculous. This only went to show that they must work together. The physician should pay attention to the radiologist and the radiologist was impotent unless he was supplied with the complete clinical history of the patient. He recalled the statement of a celebrated pathologist who declined to give an opinion on a pathological specimen unless he had previously received the clinical history. In the same way it would not be fair to ask a radiologist to express an opinion without providing him with the history. He recalled an incident in which a radiologist had been shown a picture of an infiltration at the base of the upper lobe of one lung and the opinion had been expressed that the patient was suffering from tuberculosis. If the radiologist had known that two days before the onset of symptoms the patient had had a tooth extracted under an anæsthetic, his opinion would have been different. He agreed with Dr. Edwards, though as a pupil of Gee who was a follower of Laennec, he was proud of his physical signs, that if a lesion was situated an inch below the surface of the lung it might produce no physical signs at all. Physical signs were of use only if the lesion was near the surface. Some physicians held that they had grounds for complaint, that the radiologist would make such statements as "extensive pulmonary tuberculosis is present" without giving any indication as to the stage of the disease and whether it was active or quiescent. Dr. Gillies said that in deciding questions such as these cooperation was essential.

In regard to children, he had been interested in the paper by Dr. Evans. For years he had seen most of the patients and contacts at the dispensary of the Royal Prince Alfred Hospital. He thought that after examination of a large number of skiagrams it was possible to get an idea of the average density of the bronchial shadow in young children. In the presence of increase, especially if asymmetrical, in the picture, it was possible to make a diagnosis of tuberculosis, especially if wasting and fever were present and if the patient had reacted to the

von Pirquet test. It was possible to obtain a sound idea of the condition from increased markings; the mottling and the fluffiness seen in skiagrams taken from adults were not present in children. He was prepared to say that if physical signs were present in the lungs of a child under three years, the condition was almost certainly not tuberculosis—the signs pointed to something else. In conclusion Dr. Gillies said that they owed the radiologist an enormous debt, so much so that most physicians would not express an opinion without having an X ray examination made. He reiterated his plea for cooperation, particularly in efforts to determine the activity of the lesion. Commenting on Dr. Edwards's strictures, the art of auscultation and percussion might be on the wane, but the physicians still could and did diagnose pneumothorax.

Dr. W. COTTER HARVEY said that he would lay it down as an axiom that X ray examination of the chest was indispensable for the diagnosis and prognosis of pulmonary tuberculosis or indeed of any subacute or chronic pulmonary lesion. To insist on the supreme importance of physical signs was a relic of a bygone clinical generation. It was possible by means of X rays to demonstrate disease when no physical signs were present and the X ray picture usually revealed more than the physical signs indicated. Many an early diagnosis had been and was still being missed by waiting for physical signs to appear. He thought that a good skiagram was usually of more value in pulmonary tuberculosis than physical signs, always provided that symptoms were carefully assessed. As physicians they should be candid and confess that the radiologist scored over them far more often than they over him. In one field alone, that of pneumokoniosis, physical examination was usually of no value; the diagnosis depended on the skiagram. There was no respect in which he would take the radiologist to task. He wondered how often they followed their patients to autopsy so that they might gain, as physicians did, the salutary lessons to be learned there. Some of the reports which he had seen, especially of pulmonary tuberculosis, showed that the radiologist had divorced his branch of medicine entirely from pathology. He described lesions which had never been shown to exist, lesions such as peribronchial tuberculosis and hilum tuberculosis. He also deplored the tendency of many radiologists to "sit on the fence"—"the appearances are tuberculous," "fine scattered mottling suggests possible pulmonary tuberculosis." In one report he had seen the extraordinary conclusion: "The appearance may be due to either neoplasm, hydatid, pleural effusion or unresolved pneumonia." He admitted that this was an extreme example, but thought that they had probably all seen reports of this nature. Of course it was not always possible to say from a single skiagram to what the shadows were due, but he would always prefer the radiologist who gave his straight-out opinion on a film, even if he were sometimes wrong, to one who was careful always to leave a loophole, so that he could not be tripped up by the clinician. In this he was bold enough to disagree with the authorities quoted by Dr. Griffiths.

Similarly in pulmonary tuberculosis he thought that it was quite competent for the radiologist to give his opinion on the nature of the lesion, whether it was acute or chronic, fibrotic or caseous, active or quiescent, and so on. Bearing on what Dr. Sinclair Gillies had said, he thought that the patient's symptoms would guide them to a certain extent, but they were tempting Providence if they ignored the radiologist's report of a "progressive lesion" because the patient was feeling perfectly well. He had seen several examples of this. If a radiologist merely reported "there is tuberculous mottling in both upper lobes," a not uncommon type of report, he felt that he had received very little help and that the patient had not received his money's worth. In regard to children, he agreed that it was difficult to make a diagnosis. The radiologists failed here more than anywhere. Three years previously he had found that of 112 children examined at the pulmonary clinic of the Royal North Shore Hospital 27% had yielded a reaction to the von Pirquet test and that no less than 78% had been diagnosed as tuberculous by radiological means. These figures seemed to demonstrate that the radiological findings were quite valueless in diagnosis. Since that time the results of X ray examina-

tion were better owing to improved methods of technique. Dr. Harvey concluded by thanking the three speakers for their interesting papers.

Dr. HARVEY SUTTON congratulated Dr. Evans on his paper. He thought that Dr. Evans had thrown a flood of light on tuberculosis in children and he hoped that Dr. Evans would pursue his investigations. Dr. Sutton thought that Dr. Evans had conveyed the impression that once tuberculosis was revealed in the lungs by radiological examination, the child was doomed and was certain to die of generalized tuberculosis. This was difficult to believe. He presumed that the statement had been made about children up to the age of two years. If the curve of deaths from tuberculosis were studied, it would be found that there was a decided drop after the age of two and that the drop continued until the age of five and remained low (the lowest incidence in life) from five to fifteen years of age. During Dr. Sutton's term of office with the Department of Education of New South Wales, a group of 71,000 children had been specially investigated for tuberculosis. Of this number 50 had tuberculosis and half of them tuberculosis of the lungs. At least one half of these had recovered. These figures were not in accord with those recorded as a result of *post mortem* examinations at the Royal Alexandra Hospital for Children. It was extraordinary how resistant children were to parental infection and how few of them became infected so as to manifest disease at these ages.

Dr. A. J. COLLINS thanked the three speakers for their papers and said that he was disappointed that the discussion had been carried away from the subject, that of evaluation of radiological findings. He pointed out that the radiologist saw abnormal appearances before clinical signs of disease existed and it was in the interpretation of these appearances that the difference of opinion arose. Most difficulty was experienced with conditions diagnosed as basal tuberculosis. It was in these conditions that frank discussion would be of most value. Dr. Collins illustrated his remarks by referring to the history of a patient with an abscess in the liver which had burst into the pleural cavity. In this instance there had probably been a coexisting pleural effusion. Some ten years later a radiological diagnosis of tuberculosis had been made, whereas the patient's clinical condition by no means corroborated this opinion.

Dr. EVA SHIPTON pointed out that, although it was extremely difficult to obtain sputum for examination from children, the sputum was often swallowed and the tubercle bacilli, passing through the alimentary canal intact, could be found in the faeces.

Dr. KENNETH SMITH spoke as one concerned with positive diagnosis and with the payment of compensation to ex-soldiers. He wanted to hear from radiologists whether there was any sign which would enable them to say that a pulmonary condition was due to tuberculosis and to no other form of inflammation. He had had experience of cases in which the radiological diagnosis was pulmonary tuberculosis, but in which no one else had been able to make a diagnosis of tuberculous infection, no tubercle bacilli had been found in the sputum, no reaction had occurred to tests with old tuberculin and no tuberculosis had been revealed as a result of guinea-pig inoculation. These circumstances illustrated the importance of a careful study of the clinical history. The clinician had to sort out the wood from the leaves. He could not agree with Dr. Harvey that a radiologist should be definite in his statements. He held that a radiologist could not make a definite diagnosis without studying the clinical history. In conclusion he suggested that provision should be made in the new home of the Branch for a radiological library. He felt that this would be of great value.

Dr. B. J. M. HARRISON said that the question revolved around the evaluation of densities that appeared on the X ray film. Radiologists were asked to be able to say whether a tuberculous lesion were active or not. He found this impossible. At the same time it was possible by taking repeated radiographs to watch the changes which occurred in the lungs. The basis of the work of the evaluation of densities had been carried out by Küpferle, of Freiburg. After taking a number of radiographs, he had sectioned the lungs vertically at autopsy.

From examination of the films and from the comparison of the densities of radiographs taken during life and at autopsy with the appearances found in the sections he had concluded that from the radiological point of view the densities were attributable to three different types of lesion, the productive type, the exudative type and the fibrotic type. It was possible on any radiograph to demonstrate each of these types. It meant that the lung was affected by certain types of pathological condition, but it was impossible to say whether the infection was due to the tubercle bacillus or other organism. The X ray appearances varied with the stage of the infection at which the examination was made. In certain circumstances the lesion would disappear from the radiograph after an interval of time. For example, if a patient were submitted to X ray examination soon after an hæmoptysis, the appearances might be those of extensive tuberculosis. If, however, an examination were made after an interval, the lung would appear clear. Hæmoptysis might be due to some other condition altogether. He agreed with Dr. Gillies in regard to the necessity for cooperation and thought that both radiologist and physician had their place in the evaluation of the radiological appearances. A great deal would depend on the help given by the radiologist and in his opinion the difficulties of the physician were the greater. He held that a knowledge of pathology was necessary and in this regard instanced the curved shape of a pleural effusion seen on X ray examination.

Dr. W. C. PETTERIDGE thanked the readers of the papers and referred to the tendency to rely on physical signs and exploring needles in chest conditions in children, for instance, in the presence of empyema. He thought that the use of exploring needles was often dangerous. By waiting on physical signs delay was often occasioned. X rays were a great help in difficulty. He emphasized the importance of the provision of X ray facilities in hospitals.

Dr. E. M. HUMPHERY said that the discussion told the old story of the necessity for working together for the good of the patient. If they worked in watertight compartments, someone was sure to suffer and it was always the patient who suffered. He was glad to hear a plea being made for cooperation. After a radiologist had explained a film to him he found no difficulty in interpreting it. He thought that it would help the radiologists in their work if surgeons would go back to the radiologists and tell them what they found at operation. He had been present at Professor Threlfall's lecture, referred to by Dr. Griffiths, and had had the honour of taking the first X ray photograph in New South Wales. The picture had been one of professor Threlfall's hand. At the present time such a picture would be taken by an instantaneous exposure, but in those days an exposure of fifteen minutes had been necessary. Dr. Humphery concluded by saying that he had a great respect for radiologists and referred to several instances in which they had helped him materially.

Dr. Griffiths in his reply said that judgement was difficult and experience was fallacious. In cases in which physicians could not decide, radiologists were often of great help to them, but in a small residuum of cases the difficulties were insuperable. He held that in these circumstances it was wiser for the radiologist to report: "It suggests that the condition may be . . ." If the radiologist did not know, he did well to be indefinite. He recalled a saying of the late Dr. Goode: "When ye don't know, say ye don't know and stick to it."

Dr. Evans in his reply to Dr. Sutton reiterated his statement that young children, particularly under two years of age, with definite lesions almost certainly developed generalized tuberculosis with fatal results. In children over five years of age and to the age of fifteen the incidence was much less. This was perhaps due to less exposure, as children after two years of age were in the open air and less exposed to infection from their parents and their resistance was greater.

Dr. Sutton had mentioned a number of children who had recovered from tuberculous infection of the lungs. Dr. Evans would like to know upon what criteria this diagnosis was based. Could they not be examples of the type of case he had mentioned in his paper—the thin children

with chronic cough whose X ray picture showed doubtful mottling and who really were examples of chronic bronchitis associated with nasal infection? The *post mortem* records showed that if a definite pathological lesion were present, few recovered.

Dr. Edwards in his reply referred to the possibility of a skiagraphic library. He showed several films which had been considerably reduced in size and thought that this method would be useful if the suggestion of a library were adopted. In regard to the activity of a lesion it was his custom, if the diagnosis were not clear, to make a second examination after six weeks or two months. As a result of forty *post mortem* examinations conducted on the bodies of miners at Broken Hill he and his brother had come to the conclusion that the autopsy findings corresponded with the radiological appearances.

Post-Graduate Work.

ANNUAL REFRESHER COURSE IN MELBOURNE.

THE Melbourne Permanent Committee for Post-Graduate Work has forwarded the following programme for the annual refresher course.

Monday, July 14, 1930.

- 9.30 to 11 a.m.—Registration at Post-Graduate Office, Melbourne Hospital.
 11.15 a.m. to 12.45 p.m.—At the Melbourne Hospital: Dr. F. Blois Lawton, "Acute and Chronic Bowel Infections, with Cases."
 Mr. B. T. Zwar, "Management of Head Injuries."
 2.15 to 3.30 p.m.—At the Melbourne Hospital: Dr. H. F. Maudsley, "Cases of Neurological Interest."
 Dr. Wright Smith, demonstration of pathological specimens.
 3.30 to 5 p.m.—At the Melbourne Hospital: Methods of clinical pathology in common use. Arranged by Dr. Lucy Bryce.

Tuesday, July 15, 1930.

- 9.30 to 11 a.m.—At the Alfred Hospital: Dr. James R. Bell, "Gastro-Enterostomy Sequelæ."
 Mr. Balcombe Quick, "Treatment of Empyema."
 11.15 a.m. to 12.45 p.m.—At the Alfred Hospital: Dr. J. F. Mackeddie, demonstration of clisternal puncture, tracheal puncture and artificial pneumothorax.
 Mr. John Kennedy, "Some Aspects of Anal Surgery."
 2.15 to 3.30 p.m.—At the Children's Hospital: Mr. J. G. Whitaker, "Common Surgical Conditions of the Upper Extremity."
 3.30 to 5 p.m.—At the Children's Hospital: Mr. Charles Osborn, "Affections of the Hip Joint in Children, with Illustrative Cases."

Wednesday, July 16, 1930.

- 9.30 to 11 a.m.—At the Women's Hospital: Professor R. Marshall Allan, "Indications for Interference During Pregnancy."
 11.15 a.m. to 12.45 p.m.—At the Women's Hospital: Dr. John S. Green, "Points in Obstetric Technique."
 2.15 to 5 p.m.—At the University of Melbourne, Anatomy Department: Professor Wood Jones and staff, demonstrations in surgical anatomy.
 8.15 p.m.—At the Women's Hospital: Clinical meeting, Victorian Branch of the British Medical Association.

Thursday, July 17, 1930.

- 9.30 to 11 a.m.—At Saint Vincent's Hospital: Dr. W. J. Newing, "Diagnosis and Treatment of Diseases of the Chest"; "Artificial Pneumothorax: Its Indications and Technique."
 Mr. C. Gordon Shaw, "Prostatism: Diagnosis and Treatment; Estimation of Renal Function."
 11.15 a.m. to 12.45 p.m.—At Saint Vincent's Hospital: Dr. J. G. Hayden, "The Diagnosis and Treatment of Cardiac Pain, with Illustrative Cases, Electrocardiograms and Pathological Specimens."

Mr. Leo Doyle, "The Diagnosis of Ureteral Calculi and the Technique of Pyelography, Illustrated by Pyelograms."

- 2.15 to 3.30 p.m.—At the Eye and Ear Hospital: Dr. M. E. Lynch, "Common Ear Infections."
 3.30 to 5 p.m.—Dr. Mark Gardner, "Treatment of External Eye Conditions."
 2.15 to 3.30 p.m.—At Saint Vincent's Hospital: Mr. R. F. O'Sullivan, "Uterine Hæmorrhages."
 8.30 p.m.—At the Medical Society's Hall: Post-Graduate Lecture by Professor Evarts Graham.¹

Friday, July 18, 1930.

- 9.30 to 11 a.m.—At the Melbourne Hospital: Dr. Stewart Cowen, medical cases in the wards.
 Mr. Victor Hurley, surgical cases in the wards.
 11.15 a.m. to 12.45 p.m.—At the Melbourne Hospital: Dr. S. V. Sewell (subject to be announced later).
 Mr. W. Allan Hailes, "Treatment of Burns and the Repair of the Skin Deficiencies."
 2.30 to 5 p.m.—At the Central Tuberculosis Bureau, demonstration arranged by Dr. J. Bell Ferguson, illustrating the diagnosis of early pulmonary tuberculosis *et cetera*.
 8.30 p.m.—At the Medical Society's Hall: Professor Evarts Graham.

Saturday, July 19, 1930.

- 9.30 to 11 a.m.—At the Melbourne Hospital: Dr. Ivan Maxwell, "The Diagnosis and Treatment of Renal Disease."
 Mr. Henry Searby, surgical cases.

Monday, July 21, 1930.

- 9.30 to 11 a.m.—At the Melbourne Hospital: Dr. Geoffrey Penington, "The Anæmias: Diagnosis and Treatment, with Clinical Cases."
 Mr. Basil Kilvington, clinical demonstrations in wards, with special reference to fractures of lower limb.
 11.15 a.m. to 12.45 p.m.—At the Melbourne Hospital: Dr. Konrad Hiller, medical cases in the wards.
 Mr. A. E. Coates, "Diagnosis and Treatment of Injuries of the Back."
 2.15 to 5.15 p.m.—At the Melbourne Hospital: Dr. L. J. Clendinnen, "Cases Treated by X Rays and Radium."
 Mr. G. C. Scantlebury, "General Nose, Throat and Ear Work."
 8.30 p.m.—At the Medical Society's Hall: Professor Evarts Graham.

Tuesday, July 22, 1930.

- 9.30 to 11 a.m.—At Saint Vincent's Hospital: Dr. L. S. Latham, medical cases in the wards.
 Dr. Murray Morton, "Stage Operations in Abdominal Surgery."
 11.15 a.m. to 12.45 p.m.—At Saint Vincent's Hospital: Dr. J. W. Grieve, "Diabetes: Management and Treatment in Children and Adults."
 Mr. J. Newman Morris, "Treatment of Hæmorrhoids by Injection."
 2.15 to 5.15 p.m.—At Saint Vincent's Hospital: Dr. Keith Colquhoun, (a) "The Mycotic (Ringworm) Affections of the Skin," (b) "Eczema and the Allied Infective Dermatoses."
 Dr. John O'Sullivan, "The Radiological Investigation of the Mucous Membrane of the Gastro-Intestinal Tract and Its Diagnostic Importance."
 8.30 p.m.—At the Medical Society's Hall: Professor Evarts Graham.

Wednesday, July 23, 1930.

- 9.30 to 11 a.m.—At the Women's Hospital: Dr. Arthur M. Wilson, "Indications for Interference During Labour."

¹ Professor Graham's lectures constitute a separate course and are inserted here for information only.

- 11.15 a.m. to 12.45 p.m.—At the Women's Hospital: Dr. B. Milne Sutherland, "Puerperal Sepsis."
 3 p.m.—At the Children's Orthopaedic Hospital, Frankston: Demonstration arranged by Dr. John B. Colquhoun.

Thursday, July 24, 1930.

- 9.30 to 11 a.m.—At the Alfred Hospital: Dr. W. S. Newton (subject to be announced later).
 Mr. Fay Maclure, "Hints on Local Anaesthesia."
 11.15 a.m. to 12.45 p.m.—At the Alfred Hospital: Dr. M. D. Silberberg, "Palpitation: Clinical Demonstration."
 Mr. Hugh Trumble, "Splints."
 2.30 to 5 p.m.—At the Infectious Diseases Hospital, Fairfield: Dr. F. V. Scholes, demonstration of cases.
 8.30 p.m.—At the Medical Society's Hall: Professor Evarts Graham.

Friday, July 25, 1930.

- 9.30 to 11 a.m.—At the Melbourne Hospital: Dr. Hume Turnbull, "The Causes of Heart Failure."
 Mr. W. G. D. Upjohn, "Some Observations on Minor Surgery."
 11.15 a.m. to 12.45 p.m.—At the Melbourne Hospital: Dr. Douglas Thomas, "Aspiration Lung Infections."
 Mr. C. W. B. Littlejohn, "Colles's Fracture."
 2.15 to 3.30 p.m.—At the Children's Hospital: Dr. W. McLaren, "Chronic Chest Conditions in Children."
 3.30 to 5 p.m.—At the Children's Hospital: Dr. Boyd Graham, "Practical Infant Feeding."
 8.30 p.m.—At the Medical Society's Hall: Professor Evarts Graham.

Saturday, July 26, 1930.

- 9.30 to 11 a.m.—At the Melbourne Hospital: Dr. Leslie Hurley, "The Diagnosis of Pyrexia of Obscure Origin."
 Mr. Mervyn Stewart, "Fractures Around the Elbow Joint."

Those desiring special work, including that of the Venereal Diseases Clinics at the Melbourne and Alfred Hospitals, are asked to arrange with the Honorary Secretary.

POST-GRADUATE COURSE IN RADIO THERAPY.

THE Extension Board of the University of Sydney in cooperation with the Post-Graduate Committee of the New South Wales Branch of the British Medical Association has arranged to hold a post-graduate course in radiotherapy during this year. The programme has been arranged by the Post-Graduate Committee of the Branch and the Cancer Research Committee acting in collaboration. The lectures will be held at the University of Sydney and at the British Medical Association House, 135, Macquarie Street, Sydney, and demonstrations will be held at the Royal Prince Alfred Hospital, Sydney Hospital and Saint Vincent's Hospital. In order to suit the convenience of medical practitioners, all the lectures except two will begin at 5 o'clock p.m. on Tuesday and Thursdays. The fee for the course is ten guineas, but resident medical officers of hospitals will be permitted to attend for a nominal fee of one guinea. Tickets may be obtained from the Medical Secretary of the New South Wales Branch of the British Medical Association and from the Secretary of the Extension Board at the University of Sydney.

Public Health.

MATERNITY ALLOWANCES.

A STATEMENT has been received from the Pensions and Maternity Allowance Office of the Commonwealth Treasury in which are set out the number of claims for maternity allowances, the expenditure and the cost of administering maternity allowances during the twelve months ended June 30, 1929. Allowances were paid to 132,304 mothers.

Of these 114,946 were attended by medical practitioners and 17,358 were not attended by medical practitioners. The number of claims rejected was 901. The largest groups of rejections were as follows: 479 because the mothers were aliens, 137 because the children were not viable, 113 because the allowances were not claimed within three months of the birth, 84 because claims were withdrawn or not completed and 45 because the mothers were aboriginal natives of Australia, Papua or the Islands of the Pacific.

The total expenditure was £661,520. The cost of administration was £16,627. Of this amount £8,437 was expended in salaries, £4,171 for the services of registrars, £1,419 for postage and telegrams and £1,094 for commission to post offices on money orders.

The number of claims paid is smaller than that for the previous twelve months, the latter total being 135,784; and the number rejected is smaller than that for the previous twelve months, the latter total being 1,261.

The cost of administration in proportion to every £100 of maternity allowances paid was £2 10s. 3d. for the period under review; for the previous twelve months it was £2 5s. 8d.

Obituary.

AUSTIN QUIRK HENDERSON.

DR. AUSTIN QUIRK HENDERSON whose death occurred on May 5, 1930, at East Malvern, was the youngest son of Mr. and Mrs. William Henderson. Born at Wangaratta in 1902, he was twenty-eight years of age at the time of his death.

After leaving a State school, he attended Xavier College, Kew, where he continued his studies with a view to a medical career. While at Xavier College he discovered a bent for science and mathematics and in his leaving certificate examination he gained honours in both these branches of study.

In the second year of his medical course he was appointed head prosector, while in the third he won the exhibition in anatomy. In his final year he gained first class honours in medicine and second class in surgery.

Throughout his university career his opinions were sought for and valued by his fellow students and in each year he was the students' representative on various committees, while he invariably voiced the opinion of Saint Vincent's Hospital on the Committee of the Medical Students' Society.

He was attached to Saint Vincent's Hospital, where he acted as resident officer and medical registrar, continuing in an honorary capacity until stricken down by the disease that ultimately proved fatal.

In May of last year he took charge of the practice of Dr. Frank D'Arcy, of South Yarra, but in August, owing to an attack of illness, he was compelled to relinquish his profession. However, in a brief period of apparent health he acted as lecturer in anatomy to the medical students of Newman College, but his strength was not equal to the task.

Austin Quirk Henderson took a keen interest in cricket and tennis. While at college he was a member of the first eleven and the first four; and, again, at the university and at Malvern he was a member of a tennis team. In all activities he gave of his best; he had a delightful personality and formed a circle of friends who mourn the loss of one whose character was sincere and unselfish.

Dr. Leslie Henderson, a brother, is in medical practice at Parkes, New South Wales; a second brother, Dr. Arnold Henderson, is in practice at Horsham. Deep sympathy is extended to his parents, his brothers and sister in their loss.

Dr. Andrew Brennan writes:

By the death of Austin Quirk Henderson on May 5, 1930, there was lost to medicine one of her most promising sons. He died at the age of twenty-eight, when on the very threshold of what would certainly have been a brilliant career.

A son of William Henderson, a retired school inspector, of Tooraga Road, East Malvern, it was only to be expected that his scholastic achievements both at Xavier College and the Melbourne University should be noteworthy. He matriculated with honours in 1920, gaining a Newman Scholarship and entered the University the following year. In his second year he was first prosector in anatomy and gained the exhibition in that subject the year following. His course was an honour one throughout and he graduated with final honours in 1926. He was Senior Resident at Saint Vincent's Hospital where he had been a student, and later was Registrar and Assistant Pathologist at that institution.

A fine athlete, he represented both Xavier College and the University in cricket and tennis. For a short time he was engaged in private practice in Toorak, but his health became a grave concern to his numerous friends and he died on May 5.

A keen student and teacher and an ardent worker, his quiet, unassuming, considerate manner endeared him to all. His fortitude and resignation during his hopeless illness was truly inspiring. His untimely end at such a young age is indeed a very heavy blow to his many admirers and those who knew him best, will miss him most.

Dr. A. E. Rowden White writes:

We regret to record the death of Austin Q. Henderson. He was one of the best and most popular students and was beloved by everyone with whom he came in contact. He was considered by the honorary medical staff and authorities of Saint Vincent's Hospital to be one of their most efficient officers during his period of residency and registrarship. His very promising career was cut short by an illness (following on an attack of scarlet fever while he was a student) which ended fatally a few months after he had entered into private practice.

Dr. L. S. Latham writes:

The late Dr. Austin Quirk Henderson impressed me very greatly during my association with him at Saint Vincent's Hospital. As student, resident medical officer and medical registrar he displayed very great interest in his duties and devotion to the patients under his care. Thoroughness and absolute dependability were conspicuous in his work and his personality made a strong appeal to all who met him, whether patients, colleagues or students. His untimely death has inflicted a severe loss on the profession.

ROBERT WEEKES YOUNG.

We regret to announce the death of Dr. Robert Weekes Young which occurred at Roseville, New South Wales, on June 14, 1930.

Special Correspondence.

LONDON LETTER.

BY OUR SPECIAL CORRESPONDENT.

The British Post-Graduate Hospital and Medical School.

THE Post-Graduate Medical Education Committee appointed by the Minister of Health in July, 1925, in the time of the last Conservative Government, has at last issued its report and much interest has been shown in the project since the present Minister made a long statement in the House of Commons on April 10 last. The report has been issued by His Majesty's Stationery Office in the form of a White Paper and occupies thirty-seven pages of close print. That the Committee was actuated by the old saying, "Hitch your wagon to a star," is obvious from the ambitious scope of the new scheme and further developments are eagerly awaited both by the medical profession and by those of the general public who are aware of the need for providing adequate facilities for post-graduate instruction and for coordinating the immense resources that London possesses for this purpose. The report begins by reviewing the provision for medical

post-graduate education hitherto provided in London and pays a well-deserved tribute to the valuable work that is being done by the Fellowship of Medicine and Post-Graduate Medical Association. The Fellowship of Medicine was started by a few enthusiastic spirits in 1919 on a capital of £100 and up to the end of 1929 some six thousand post-graduates were enrolled for courses of instruction held under its auspices at the various affiliated general and special hospitals and some £16,000 was distributed to the participating hospitals. The work of this association is, of course, still being carried on.

The great defect of all post-graduate work, as arranged up to now, has been the lack of a central general hospital devoted solely to post-graduate instruction in general medicine and surgery, though the many excellent special hospitals have done and are doing fine work in regard to the special branches of study.

The new scheme will remedy this defect, as the first principle laid down is the necessity for acquiring and equipping a general hospital and after much discussion the Hammersmith Hospital, Ducane Road (some twenty minutes from Piccadilly), has been decided upon as most nearly filling the requirements of the scheme. It contains already some four hundred beds of which three hundred and thirty-four are for general medical and surgical cases and the building is of modern design and equipment. The sum of £250,000 has been promised by the Government for converting the hospital to its new purpose, for adding further beds, for building an out-patient department (which it at present lacks), for building and equipping a medical school *et cetera*. In addition, residential accommodation in another part of London is to be provided for the post-graduate students.

The devising of this scheme has been rendered much easier by the substitution last month of the London County Council as the central body governing all public (as apart from "voluntary") hospitals, in place of the old boards of guardians locally elected for each parish or district. The London County Council will be the final arbiter of the new post-graduate hospital's destiny and, in addition to managing the hospital itself, will be concerned in the appointing of the medical staff and the organizing of the medical school. With the resources of the State behind it and the enthusiastic cooperation of the medical profession, there is every hope that London will, in time, become the Mecca of post-graduate medical instruction, a position which it should undoubtedly hold in view of the limitless clinical material available within its enormous boundaries.

Diploma in Gynecology and Obstetrics.

The regulations are now available of the new Diploma in Gynecology and Obstetrics granted by the Royal College of Physicians of London and Royal College of Surgeons of England, and the following are the main conditions attached to it. The examination is to be held in April and in October and the subjects are: (i) Gynecology and obstetrics, including pathology, histology and bacteriology in relation to these subjects, and (ii) ante-natal, post-natal and infant welfare work. The examination is written, oral and clinical, but only those who satisfy the examiners in the first two parts will be admitted to the clinical part. Candidates who have held a degree in medicine and surgery, recognized by the Examining Board in England, or a qualification recognizable in this country, for not less than three years, will be eligible for admission to the examination on producing certificates of study required by the regulations. For copies of the regulations and for further information application should be made to the Secretary, Examining Board, Examination Hall, Queen Square, London, W.C.1.

Correspondence.

DIATHERMY OF TONSILS.

SIR: Diathermy of tonsils already has some very staunch supporters.

The more conservative of us, whilst admitting that most of the tonsil can be removed satisfactorily by this method,

hesitate to use it universally on account of the knowledge that, unless more or less peritonsillar tissue is destroyed at the same time, complete removal is impossible with the usual techniques.

(I say usual techniques because Dr. Halloran at the recent congress in Sydney demonstrated instruments and referred to a method by which I believe tonsils could be removed by diathermy with very little peritonsillar damage, but only in those cases which could be enucleated completely with a guillotine, that is, it could not be applied to all tonsils with complete success. In this method an insulated snare dislocates the tonsil and an insulated forceps grips the tonsil projecting through it. The current is then passed from one instrument to the other.)

In the past we have seen so much trouble from incomplete removal that we do not at once accept the assurance of the enthusiasts that it does not matter if one leaves part of the tonsil after a diathermic removal. The statement is so much at variance with one's previous experience and with what one would expect, that we would rather see others do the experimenting and let time show if the treatment is satisfactory.

Dr. Kent Hughes and Dr. Pern could do nothing more to convince me of the value of diathermic removal than to have sufficient courage in their convictions to entreat their colleagues to bring to light in your journal those cases that have proved unsatisfactory after their administrations.

I feel that either the courage would be lacking or the crop of cases would be sufficient to bow the heads of the advocates of diathermy. On the other hand, if I prove wrong, no one will be more delighted than I.

Yours, etc.,

A. B. K. WATKINS.

Commercial Bank Chambers,
Bolton Street, Newcastle,
New South Wales.

June 7, 1930.

SIR: Although "comic opera" is apparently losing popularity as a means of entertainment, let us be thankful for our Medical Journal. In your issue of June 7 appears a contribution from Dr. A. J. Cahill re "Diathermy of Tonsils," in which is displayed considerable histrionic ability. Dr. Cahill coagulated his tonsils, he desiccated his tonsils, he coagulated them again, and "*mirabile dictu*" he contemplates desiccating or coagulating the unfortunate remains.

It surely requires a conjurer to perform miracles like this. I fear were an ordinary medical practitioner to desiccate a tonsil there would surely be no tonsil for coagulation. Dr. Cahill reminds me of an American rhinologist who, in reporting an operation, stated that he did a "complete exenteration of the ethmoids," and in the same paragraph stated that a couple of weeks later he opened the "remaining ethmoid cells." Can inconsistent

assertions like these encourage one to place credence on such reports?

I have seen perfect results from surgical diathermy of tonsils, but I have more often seen the reverse and the necessary dissection of unhealthy remnants is not facilitated by the previous diathermy.

In spite of the pain and expense attached to surgical removal of tonsils, I am at present fully convinced that the ultimate benefit to the patient is greater than with diathermy treatment. Like everyone else, I have my failures, for the man who claims 100% successes is obviously a liar or his number of cases is insufficient for consideration.

Dr. Cahill refers to "acute pain and discomfort that continue for a week or ten days after every surgical tonsillectomy." Although this condition does occur in a number of cases, Dr. Cahill's assertion is so obviously grossly exaggerated and biased as to wholly discredit his communication.

However, it is instructive to learn that Dr. Cahill employed a "junior nurse" to "mould the inactive electrode to the contours of his upper dorsal region," for one ignorant of the proper method might have employed a "senior nurse" and may have inadvertently had the inactive or perhaps, worse still, the active electrode applied to his lower sacral region.

Yours, etc.,

ERNEST CULPIN, M.B., Ch.M.

Brisbane.

June 10, 1930.

THE ALEXANDER WILSON TESTIMONIAL.

THE Honorary Treasurer of the Alexander Wilson Testimonial has forwarded the statement of receipts and payments with the request that it be published. The statement is published hereunder.

Books Received.

SOUVENIR: HENRY HILL HICKMAN CENTENARY EXHIBITION, 1830-1930, at the Wellcome Historical Medical Museum. Crown 4to., pp. 85.

TREATMENT IN GENERAL PRACTICE, by Harry Beckman, M.D., 1930. Philadelphia and London: W. B. Saunders Company; Melbourne: James Little. Royal 8vo., pp. 899. Price: 50s. net.

A TEXTBOOK OF HYGIENE, by J. R. Currie, M.A., M.D., D.P.H., M.R.C.P., 1930. Edinburgh: E. and S. Livingstone. Demy 8vo., pp. 864, with 110 illustrations. Price: 27s. net.

PARENTHOOD: DESIGN OR ACCIDENT? A MANUAL OF BIRTH-CONTROL, by Michael Fielding, Revised and Enlarged Edition; 1930. London: Williams and Norgate Limited. Foolsap 8vo., pp. 168. Price: 2s. net.

The Alexander Wilson Testimonial: Financial Statement.

RECEIPTS.				PAYMENTS.			
	£	s.	d.		£	s.	d.
To Donations	444	6	6	By Printing, Stationery, Stamps <i>et cetera</i> ..	21	10	8
„ Interest from Fixed Deposit	1	3	4	„ Cheque to A. Wilson	423	19	2
	£445	9	10		£445	9	10

Audited and found correct.

W. EPPS,
Secretary, R.P.A.H.

(Signed) E. E. BROOKS, F.C.A. (Aust.),
Honorary Auditor.

C.O. Brooks and Dean,
Chartered Accountants (Aust.),
15, Castlereagh Street,
Sydney.

For the Committee,

R. A. MONEY,
Honorary Secretary and Treasurer.

Diary for the Month.

JUNE 24.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 JUNE 25.—Victorian Branch, B.M.A.: Council.
 JUNE 26.—New South Wales Branch, B.M.A.: Branch.
 JUNE 26.—South Australian Branch, B.M.A.: Branch.
 JUNE 27.—Queensland Branch, B.M.A.: Council.
 JULY 1.—New South Wales Branch, B.M.A.: Council (Quarterly).
 JULY 1.—New South Wales Branch, B.M.A.: Organization and Science Committee.
 JULY 2.—Victorian Branch, B.M.A.: Branch.
 JULY 3.—South Australian Branch, B.M.A.: Council.
 JULY 4.—Queensland Branch, B.M.A.: Branch.
 JULY 8.—New South Wales Branch, B.M.A.: Ethics Committee.

Medical Appointments.

Dr. F. Trenerry (B.M.A.) has been appointed Medical Inspector of Seamen pursuant to the provisions of the *Navigation Act*, 1912-1926.

Dr. W. L. Fothergill (B.M.A.) has been appointed Acting Medical Inspector of Seamen and Medical Inspector of Shipping at the Port of Darwin, pursuant to the provisions of the *Navigation Act*, 1912-1926.

Dr. S. C. Joel (B.M.A.) has been appointed acting Medical Inspector of Seamen at the Port of Bunbury, Western Australia, pursuant to the provisions of the *Navigation Act*, 1912-1926.

Dr. C. H. G. Ramsbottom (B.M.A.) has been appointed Honorary Assistant Physician to the Tuberculosis Clinic at the Adelaide Hospital, South Australia.

Dr. W. De W. Henty (B.M.A.) has been appointed Superintendent (Acting) of the Receiving House and of the Hospital for the Insane, Royal Park, Victoria.

Dr. W. I. Clark has been appointed Medical Officer (and Examiner) of the State Psychological Clinic, Hobart, Tasmania.

Dr. K. Lidgett (B.M.A.) has been appointed Public Vaccinator at Quambatook, Victoria.

Dr. A. M. A. Clark (B.M.A.) has been appointed Public Vaccinator at Winchelsea, Victoria.

Dr. R. H. Von der Borch (B.M.A.) has been appointed to act temporarily as Medical Officer-in-Charge of the Bureau of Medical Inspection, Broken Hill, Chairman of the Medical Board constituted under the *Workmen's Compensation (Broken Hill) Act*, 1920, and Chairman of the Medical Board constituted under the *Workmen's Compensation (Lead Poisoning) (Broken Hill) Act*, 1922, New South Wales.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xvi.

AUSTIN HOSPITAL FOR CHRONIC DISEASES, HEIDELBERG, VICTORIA: Junior Resident Medical Officer.

HOBART PUBLIC HOSPITAL, HOBART, TASMANIA: Senior Resident Medical Officer (1), Junior Resident Medical Officers (2).

RENNICK HOSPITAL FOR INFANTS, SUMMER HILL, NEW SOUTH WALES: Honorary Anaesthetist.

ROYAL HOSPITAL FOR WOMEN, PADDINGTON, NEW SOUTH WALES: Honorary Dermatologist.

ST. GEORGE DISTRICT HOSPITAL, KOGARAH, NEW SOUTH WALES: Honorary Consulting Obstetrician and Gynaecologist.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 21, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company, Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Mount Isa Hospital.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and book-sellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £1 for Australia and £2 5s. abroad per annum payable in advance.